LOGIC GALLERY

David Marans

Aristotle	Apuleius	Plotinus/Porphyry	Dharmakīrti	Avicenna
William of Ockham	Lorenzo Valla	Juan Luis Vives	Antoine Arnauld	Gottfried Leibniz
Isaac Watts	Bernard Bolzano	George Boole	Richard Whately	Gottlob Frege
Constance Jones	Bertrand Russell	Henri Bergson	Alfred Tarski	W. V. O. Quine

David Marans
University of Miami 1960-1973

AUTHOR PROFILE

Logic Gallery   © 2011-2023
Issue 329xh

Bodleian Library, Oxford

Dedicated to
my beloved wife Sandra

My family
Mimi and Harris Levine, Elaine Marans, Robert and Diane Herzog

Brooklyn Center Academy class of 1956
Alice, Barry, Carol, David, Harriet, Howard, Jay, Lee, Lenore, Maxine, Richard, Ronnie, Steve

Acknowledgments

David Miller
Coventry, West Midlands

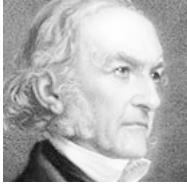| Claire Ortiz Hill	Stephen Read	Stephen Wolfram	Wolfgang Lenzen
Paris, Île de France	St. Andrews, Fife	Concord, Massachusetts	Osnabrück, Lower Saxony

*A clerk there was of Oxenford also, that unto **logyk** hadde long y-go. ....*
Sownynge in moral virtu was his speech, and gladly wolde he lerne and gladly teche.
Chaucer, ***Canterbury Tales***

Forewords   # = also see [POSTAGE STAMP](#)

Men are apt to mistake the strength of their feeling
for the strength of their argument. The heated mind resents
*the chill touch and relentless scrutiny of **logic**.*

British Prime Minister, William Gladstone

*No, no, you're not thinking; you're just being **logical**.*

Danish physicist, Niels Bohr

.

*Fear is a disease that eats away at **logic** and makes man inhuman.*

American contralto, Marian Anderson

.

***Logic** is the technique by which we add conviction to truth.*

French satirist, Jean de la Bruyere

Man has such a predilection for systems and abstract deductions
that he is ready to distort the truth intentionally,
*he is ready to deny the evidence of his senses only to justify his **logic**.*

Russian novelist and journalist, Fyodor Dostoevsky
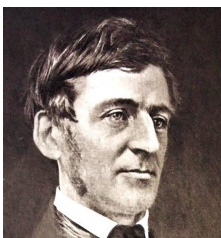
If we consider those who have stimulated and profited us, we shall perceive the superiority
*of the spontaneous or intuitive principle over the arithmetical or **logica**l.*
*The first contains the second, but virtual and latent. We want in every man a long **logic**; we*
*cannot pardon the absence of it, but it must not be spoken. **Logic** is the procession or*
proportionate unfolding of the intuition; but its virtue is as silent method; the moment it
would appear as propositions and have a separate value it is worthless.

American essayist, Ralph Waldo Emerson

*Pure **logic** is the ruin of the spirit.*

French writer and aviator, Antoine de Saint-Exupéry

*Crime is common. **Logic** is rare. Therefore it is upon the **logic** rather than upon the crime that you should dwell. You have degraded what should have been a course of lectures into a series of tales.*

\# **Fictional detective, Sherlock Holmes**

*Instinct is something which transcends knowledge. We have, undoubtedly, certain finer fibers that enable us to perceive truths when **logical** deduction, or any other willful effort of the brain, is futile.*

\# **Serbian-American scientist-inventor, Nikola Tesla**

***Logic** can be patient, for it is eternal.*

British electrical engineer, Oliver Heaviside

*I have always respected those who defend grammar and **logic**. We realize, fifty years later, that they averted serious dangers.*

\# **French novelist, Marcel Proust**

*The decay of **Logic** results from an untroubled assumption that the particular is real and the universal is not.*

British author and Christian-apologist, C. S. Lewis

*We especially need imagination in science. It is not all mathematics, nor all **logic**, but it is somewhat beauty and poetry.*

\# **Italian education reformer, Maria Montessori**

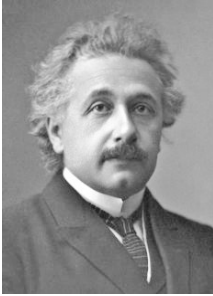***Logical** consequences are the scarecrows of fools and the beacons of wise men.*

British biologist, Thomas Henry Huxley

***Logic** is doubtless unshakable, but it cannot withstand those who want to go on living.*
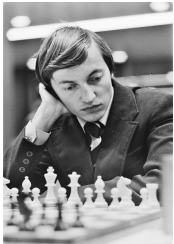
\# **Bohemian novelist, Franz Kafka**

*There is no **logical** way to the discovery of these elemental laws.*
There is only the way of intuition
which is helped by a feeling for the order
lying behind the appearance.

\# **German/Swiss/American physicist, Albert Einstein**

*Better to be without **logic** than without feeling.*

\# **British novelist, Charlotte Brontë**

If the opponent offers keen play,
I don't object; but in such cases I get less satisfaction,
even if I win, than from a game
conducted according to all the rules of strategy
with its ruthless **logic**.

\# **Russian chess grandmaster and world champion, Anatoly Karpov**

The best men have their blind spots,
and sometimes they feel almost crushed
at how little respect **logic** can show them.

\# **French novelist, Victor Hugo**
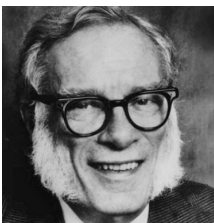
*You can prove anything you want by coldly **logical** reason---*
if you pick the proper postulates.

\# **American science and science fiction author, Isaac Asimov**

But that's men all over. Poor dears, they can't help it.
*They haven't got **logical** minds.*

British mystery novelist and poet, Dorothy Sayers

Humor is something that thrives
between man's aspirations and his limitations.
*There is more **logic** in humor than in anything else,*
because, you see, humor is truth.

\# **Danish concert pianist/comedian, Victor Borge**

PREFACE

Strictly speaking, **Logic Gallery** is not a contribution to stylized scholarship.
It does not propound a philosophical/logical thesis.
No part of it will ever appear in a professional journal. And it is not a response to some critique.
Rather, it is an enhanced chronology of the history of an Idea–**Logic**– so as to:
(1) Chart both the continuity and growth of logic through the centuries since ancient Greece
(2) By quotations, salute the Pantheon that has promoted, elaborated, refined, and advanced the idea
(3) Portray the recognized importance of logic over the course of Western civilization.
(4) Sketch the lives of those most recognized in the history of logic
(5) With images, further depict their lives, their cultural milieus, and historical contexts
(6) Be particularly useful in the classroom by fostering discussion and follow-up
(7) Here and there evoke a smile

Further Resources

The Development of Logic, William and Martha Kneale , the long standing opus, Print only
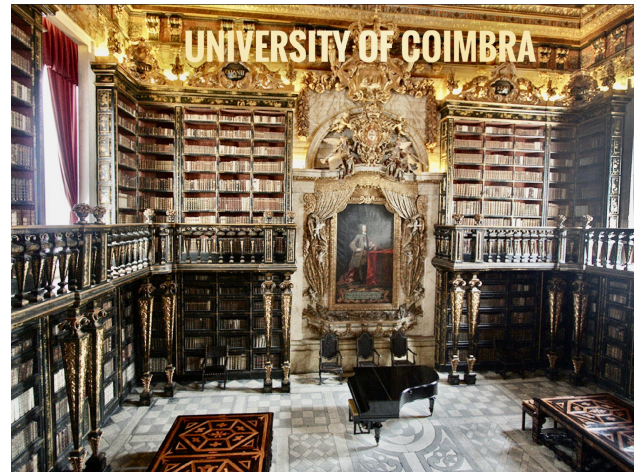
A History of Formal Logic, Józef Bochenski, PDF

"The History of Logic", Peter King and Stewart Shapiro PDF

The History of Logic: Aristotle to Gödel Raul Corazzon's extraordinary and impressive digital achievement

David Marans

AUTHOR PROFILE

Table Of Contents (TOC)

NB: As the pages are in <u>chronological</u> order, IT IS VERY ADVISABLE to start with a full read WITHOUT THE HYPERLINKS so as to appreciate both continuity and growth from Classical to Medieval to Enlightenment to Modern to Contemporary, and surely NOT just jump past unfamiliar figures (several of which are surprising). Thereafter, this <u>HYPERLINK table</u> is more useful.

A. J. Ayer	John Buridan	Victor Doublet
Francis Bacon	Walter Burley	Epictetus
Roger Bacon	Georg Cantor	Desiderius Erasmus
Alexander Bain	Juan Caramuel	Leonhard Euler
Alexander Baumgarten	Rudolf Carnap	A. C. Ewing
Vincent of Beauvais	Ernst Cassirer	Al-Farabi
Henri Bergson	Chrysippus	Solomon Feferman
George Berkeley	Alonzo Church	Christine Ladd Franklin
Claude Bernard	Cicero	Gottlob Frege
Brand Blanshard	Richard Frederick Clarke	Pierre Gassendi
Boethius	Morris Raphael Cohen	Al-Ghazzali
Bernard Bolzano	Étienne Condillac	Joseph Henry Gilmore
George Boole	Nicolas Condorcet	Kurt Gödel
Mary Everest Boole	Nicolaus Copernicus	Johann Wolfgang von Goethe
Bernard Bosanquet	Louis Couturat	William Hamilton
Pierre Leon Boutroux	Nicholas of Cusa	Wilhelm Friedrich Hegel
Francis Bowen	Augustus De Morgan	Martin Heidegger
F. H. Bradley	René Descartes	David Hilbert
Thomas Bradwardine	John Dewey	Jaakko Hintikka
Franz Brentano	Dharmakīrti	Thomas Hobbes
L. E. J. Brouwer	Denis Diderot	David Hume
Giordano Bruno	Charles Lutwidge Dodgson	Edmund Husserl

Francis Hutcheson	C. I. Lewis	Isaac Newton
William James	Ramon Llull	William of Ockham
Alexander Jamieson	John Locke	Octavius Freire Owen
William Stanley Jevons	Hermann Lotze	Blaise Pascal
Samuel Johnson	Ada King Lovelace	Charles Parsons
William Ernest Johnson	Jan Łukasiewicz	Giuseppe Peano
E. E. Constance Jones	Hugh MacColl	Charles Sanders Peirce
H. W. B. Joseph	Moses Maimonides	Almira Phelps
George Hayward Joyce	Thomas Mann	Jean Piaget
Immanuel Kant	Ruth Barcan Marcus	Plotinus
John Neville Keynes	Moses Mendelssohn	Gottfried Ploucquet
Søren Kierkegaard	Alexius Meinong	John Poinsot
Robert Kilwardby	Philip Melanchthon	Henri Poincaré
Al-Kindi	John Stuart Mill	Karl Popper
Stephen C. Kleene	William Minto	Porphyry
Saul Kripke	Pico della Mirandola	Joseph Priestley
Andrei Kolmogorov	Michel de Montaigne	Proclus
Johann Lambert	Charles-Luis Montesquieu	Willard V. O. Quine
Susanne Langer	Charles Richard Morris	Frank Ramsey
Pierre-Simon Laplace	Ernest Nagel	Petrus Ramus
Gottfried Leibniz	John von Neumann	René Rapin
Stanisław Leśniewski	John Newbery	Hans Reichenbach

Julia Bowman Robinson

Josiah Royce

Bertrand Russell

John of Salisbury

George Santayana

Albert of Saxony

F. C. S. Schiller

Moses Schönfinkel

Arthur Schopenhauer

Ernst Schröder

Dana Scott

Duns Scotus

Isidore of Seville

Christoph Sigwart

William of Soissons

Peter of Spain

Baruch Spinoza

Susan Stebbing

St. George Stock

Francisco Suárez

Patrick Suppes

Alfred Tarski

Theophrastus

Alan Turing

Miguel de Unamuno

Lorenzo Valla

Paul of Venice

John Venn

Giambattista Vico

Juan Luis Vives

Voltaire

John Wallis

Isaac Watts

Victoria Lady Welby

John Wesley

Hermann Weyl

Richard Whately

Alfred N. Whitehead

Timothy Williamson

Ludwig Wittgenstein

Christian Wolff

Ernst Zermelo

CODAS

Addendum

R. I. P. Shoulders of Giants

Philatelic Logic

Stained Glass

In correct **logic**,
certain things are supposed,
and something else results of necessity.*

Logic is useful, by its ability
to raise searching difficulties
on both sides of a subject
and make us detect more easily
the truth and error
about the several points that arise. **

If we ought to philosophize,
then we ought to philosophize.
And if we ought not to philosophize, then
we ought to philosophize
[to prove we ought not].
Thus, we ought to philosophize.***
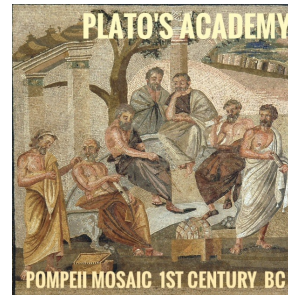
Aristotle

Greek, born Stagira, 382 B.C.
*Organon: Categories, Interpretation,*Prior Analytics, Posterior Analytics, **Topics, Sophistical Refutations*
****Protrepticus*
Physics, Astronomy, The Soul, Animals, Metaphysics, Ethics, Politics, Rhetoric, Poetics,.. more
The most influential logician and encyclopedic mind, ever
Massive works in logic, the *Organon*, unchallenged for over 2000 years
The founder of the science of logic in Western civilization
Mentor to famed ruler Alexander The Great
At Plato's Academy for 20 years, becoming Plato's assumed successor
But left Athens to head the Lyceum school when Plato selected Speusippus
Nearly half of his works still lost!!
Lunar crater named for him

http://www.ucmp.berkeley.edu/history/aristotle.html
http://www.logicmuseum.com/joyce/reid_aristotle.htm

FIND STAINED GLASS WINDOW   FIND POSTAGE STAMP

Those who force us to give an argument
for the axiom of contradiction
are most stupid and violent.
For he who opposes this axiom
immediately does away
with the use of reasoning and demonstration.
For if nothing is more than its opposite, what is the use
of reasoning and **logical** proof and conclusion?
And what is the fruit of all this activity,
when he who tries to defend the axiom
is forced to use in its proof
something inferior to it in respect of self-evidence?*

attributed to Theophrastus by Syrianus
cf. Aristotle, Epictetus, Boutroux
and on the axiom of contradiction cf. Blanshard

If the proposition A then B, if B then C;
hence if A then C.
If A then B; if not A then C; hence if not B then C.
If A then C; if B then not C; hence if A then not B.*

The three primary Hypothetical Syllogisms
attributed by Boethius and by Alexander of Aphrodisias
and cf. Chrysippus
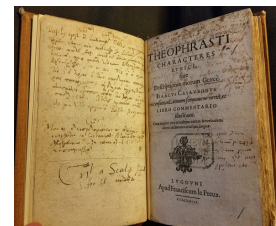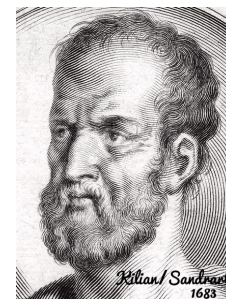
Theophrastus

Greek, born Eresos, Metileme, c. 371 B.C.
On First Principles
Enquiry into Plants
On Characters   a remarkable catalogue of the enduring character types in mankind   (see link below)
On Sweat, Dizziness, and Fatigue;   On Weather Signs;   On Stones
*Project Theophrastus   the ongoing research project to publish all references, attributions, and snippets
        Life, Writings, Various Reports, Logic, Physics, Metaphysics, Theology, Mathematics.
Successor to Aristotle in the Lyceum
Considered the father of botany
Most of his writings lost
Said to have remarked *"We die just when we are beginning to live."*
Lunar crater in his name

https://books.google.com/books/about/Theophrastus_of_Eresus_Logic_texts_68_13.html?id=rs2LTFomqPcC

On Characters

Agora, Athens   3rd century B.C.

J. Bühlmann   1881

Crispus philosoph°

Nuremberg Chronicle 1493

DELLE VITE
DE FILOSOFI
DI DIOGENE LAERTIO
Libri dieci.

IN VENETIA, M.DCXI.

restored Euboulides

To follow the scent of an animal,
the hunting dog uses this **logic**:

"The animal went either
by this road, or by that, or by the other:
but it did not go by this nor that,
thus it went the other way."

In Sextus Empiricus, *Outlines of Pyrrhonism,* 2nd Century A.D.

Chrysippus

Greek, born Tarsus, 280 B.C.
Head of a school in the Agora's Painted Colonnade
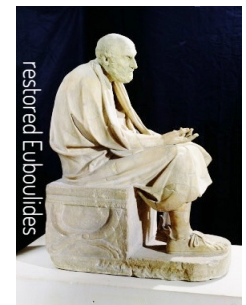Several hundred books, none of which survive, only fragments and secondary sources remaining
In Diogens Laertius, *Lives of Eminent Philosophers* (see above)
Work encompassed logic, nature, theology, and much more
Argued that logic pervades all of Nature
His five postulates of logic:
    1. **If the first, then the second. The first. Therefore, the second.**   Modus Ponens
    2. **If the first, then the second. Not the second. Therefore, not the first**.   Modus Tollens
    3. **Not both the first and the second. The first. Therefore, not the second**. Incompatible Argument
    4. **Either the first or the second. The first. Therefore, not the second**.   Strong Disjunctive Argument
    5. **Either the first or the second. Not the first. Therefore, the second**.   General Disjunctive Argument
Work obscured for over 2,000 years, then revived and blossomed since mid-19th century
      (*sed videre*: Albert of Saxony and Thomas Bradwardine)
In debate, would often be the only speaker and argue both sides of the question
Said to have died in a fit of laughter after drinking wine and watching a donkey eat figs

http://phoenicia.org/chrysippus.html
                http://philpapers.org/archive/BOBSS.1.pdf

INDICTING CATILINE BEFORE THE SENATE

H. Schmidt 1920

In **logic** there are no directions
how truth may be discovered,
but only how it may be judged.
Following it, we resist
the force of an argument
by showing that the conclusion
cannot be deduced from the premises.*
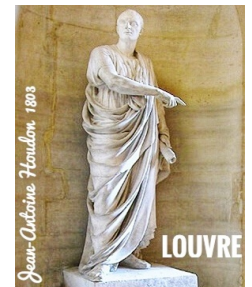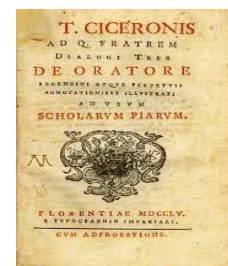
Marcus Tullius Cicero

Roman, born Arpinum, 106 B.C.
On Oratory and the Orator
On the Republic, On the Laws, About the Ends of Goods and Evils
On the Nature of the Gods, On Friendship On Duties
Countless speeches; over 800 letters
Acknowledged and praised as the greatest orator, ever
Established Latin as prominent for sixteen centuries in western civilization
Fashioned a prose style which in nineteen centuries has not been equaled
Strove (unsuccessfully) to save the freedom of the Roman Republic
Inspired the founders of the United States and the leaders of the French Revolution
Politically inept and ill-advised, was often entangled in jealousy, turmoil, and intrigue
A threat to the new Roman Dictators, was falsely accused, hunted down, and assassinated
Theorized, long before Copernicus, that the earth moves through space

http://darkside.hubpages.com/hub/cicero

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When one of those who were present said,
"Persuade me that **logic** is necessary,"
Epictetus replied,
"Do you wish me to prove this to you?"
The answer was, "Yes." And Epictetus replied,
"How then will you know
if I am cheating you by my argument?"
The man was silent.
"Don't you see," said Epictetus,
"that you yourself are admitting
that **logic** is necessary,
if without it you cannot know so much as this:
whether **logic** is necessary or not necessary?"*

cf.   Aristotle's *Protrepticus*
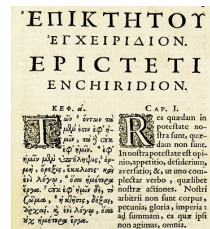
Epictetus

Greco-Roman, born Hierapolis, 55 A.D.
Discourses (compiled by his student Arrian)
Born a slave, taken to Rome, urged by his owner to study philosophy with the leading masters
Soon, and still a slave, began lecturing and teaching
Later, having gained his freedom, attracted a great many students to his own school
Reestablished his school in Nikopolis after Emperor Domitian expelled all philosophers
A leading figure in the Stoic tradition
Became widely known for his wisdom
Strove to fathom the Rational and Moral basis of life
Insisted that we can and must control ourselves, since we have little control of events
Though probably never married, did adopt and raise an abandoned orphan

http://www.roangelo.net/logwitt/epictetus.html

The love of wisdom, which we call philosophy, has three parts:
physics, ethics, and that of which I now propose to speak–**logic**......
Now therefore it must be explained how it must be that the original four propositions
are affected towards each other, for which it will not be foreign to the purpose
to survey in a square form.
There are in the upper line as may be seen in what follows.
the universal affirmative and universal negative,
and these are said to be *CONTRARY* to each other.
Likewise in the bottom line are particulars, and these are said to be *SUBCONTRARY*.
Afterwards two oblique angular lines are drawn
of which one extends from universal affirmative to particular negative,
but the other from particular affirmative to universal negative
which propositions being contrary to each other both in quantity and quality
are called *CONTRADICTORY*.
Between the subcontrary propositions and those that are contrary
there is a divisible opposition,
because the contraries are never indeed at one and the same time true,
yet are sometimes at once false.
Yet those that are subcontrary are never at one and the same time false,
yet sometimes are at once true
and on this account the refutation of either of them confirms the truth of the other,
though the confirmation of the truth of either does not confute the other.
He indeed who confirms that either of two contraries is true subverts the other
yet it does not follow that he who subverts either establishes on that account the other.
But between those propositions that are contradictory
there is complete opposition.
For he who proves the truth of the one refutes the other,
and he who refutes the one establishes the truth of the other.
Moreover every universal proposition when proved to be true
confirms its own particular proposition, [said to be the *SUBALTERN*],
but he who refutes the universal does not on that account refute the particular.
However, he who refutes particular proposition
confutes also its own universal proposition,
but when proved to be true does not establish it.*
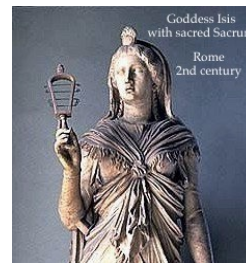
Apuleius

*There is no diagram in the Apuleius text.
This inserted in a 9th century manuscript.*

Roman, Numidian Berber, born Madaurus, c. 124
Perihermeneias   Book III of *The Philosophy of Plato*   (lays out the first Square of Opposition)
Metamorphoses (*The Golden Ass*) sole surviving Latin novel; model for subsequent picaresque literature
Apology (successful eloquent defense when tried for seducing his wife by magic and wizardry)
Even so, somewhat active in the Cult of Isis and the future's primary resource regarding it
Depleted considerable family inheritance through travel, study, and fraternity
Regained status and fortune through acclaimed oratory and marriage to an older and wealthy widow
A leading figure in the neo-Platonism of the age

http://web.eecs.utk.edu/~mclennan/papers/Apuleius-long.htm

They are true fugitives, who fly from λόγοѕ
[**logic**, reason] by which we inquire.

True happiness requires very little.
You may despair that you will ever be
a good logician or a good scientist....
But through error and needless wandering,
you know many false paths to happiness.
Neither syllogisms, refinements in **logic**, wealth,
awards, reputation, nor pleasure can attain it.
How is it found? — only by doing that which
makes you just, temperate, courageous, liberal,
and by understanding
that there is nothing truly evil and hurtful
except that which causes the contrary.*
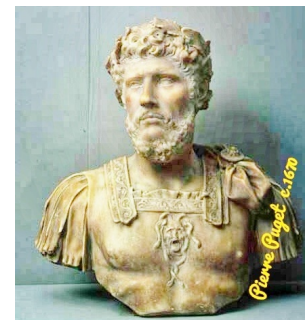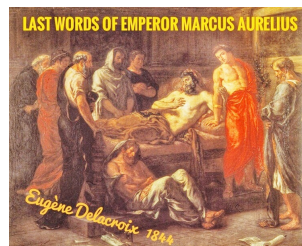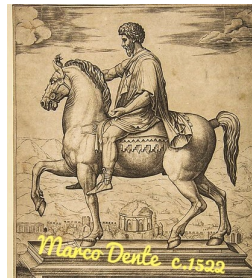
Emperor Marcus Aurelius

Roman, born Ucubi, Boetica, 121
* *Meditations*, originally titled "ThingsTo One's Self"
   A masterpiece of Stoicism, recognized as one of the most influential books in Western thought
Emperor of the Roman Empire, 161-180 AD
Studied with the foremost philosophers
Military campaigns much delayed the invasions and fall of the empire
Troubled by the increasingly brutal persecution of Christians, but did nothing to stop it
Death marked the end of the 200 year *Pax Romana*

https://dailystoic.com/marcus-aurelius/   FIND POSTAGE STAMP

https://books.google.com/books/about/The_Meditations_of_Marcus_Aurelius.html?id=AlXwLh0TA1wC

https://ia802605.us.archive.org/3/items/meditationsofmar00marc/meditationsofmar00marc.pdf

It is not possible
to **logically** infer what is false
from things that are true.
All that is proved
through what is true
is true itself.*
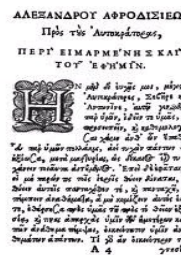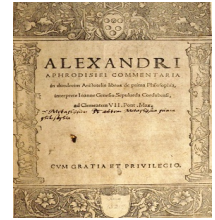
Alexander of Aphrodisias

Eastern Mediterranean, born Caria, 180 A.D
Commentary on Aristotle: Topics
Other Aristotle commentaries: *Organon, Meteorology, Sense and Sensibilis, Metaphysics*
Original works: *On the Soul, Ethical Problems, On Fate, and On Mixture and Growth*
Several works lost
A widely respected scholar and head of a school for philosophy
Virtually nothing known of his life
A primary conduit of the unquestioned Aristotelian logic for over 2,000 years
His non-transcendent god much emulated by Renaissance humanists
First to describe it, the Alexander Effect in rainbows named for him
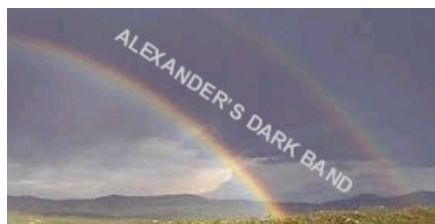
http://www.informationphilosopher.com/solutions/philosophers/alexander/

http://peenef2.republika.pl/angielski/hasla/a/alexanderofaphrodisia.html

Logic is the precious part of Philosophy.
We must not think of it as the mere tool of the metaphysician.
Logic does not consist of bare theories and rules:
it deals with verities; Existences are, as it were,
Matter to it, or at least it proceeds methodically towards Existences,
and possesses itself, at the one step, of the notions and of the realities.
Untruth and sophism it knows, not directly, not of its own nature,
but merely as something produced outside itself,
something which it recognizes to be foreign to the verities laid up in itself
In the falsity presented to it, **logic** perceives a clash
with its own canon of truth.
Logic, that is to say, has no knowledge of propositions,
but it knows the truth and, in that knowledge,
knows what the schools call their propositions.
Logic knows above all, the operation of the soul,
and, by virtue of this knowing, what is affirmed and what is denied,
whether the denial is of what was asserted or of something else,
and whether propositions agree or differ
All that is submitted to **logic**, it attacks
with the directness of sense-perception,
and **logic** leaves petty precision of process
to what other science may care for such exercises.*
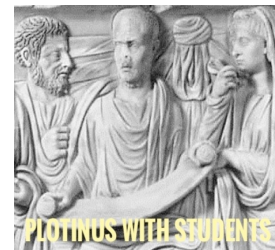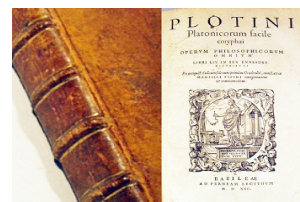
Ennneads, 14th century MS
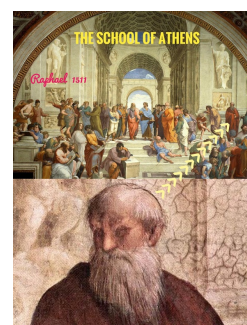
Plotinus

Greek, born Lycopolis, Egypt, 210
Enneads, #1, Third Tractate
Biography, by his student [Porphyry](#): **"Lectures by Plotinus had the air of conversation,**
        and he never forced upon his hearers the severely logical substructure of his thesis."
Credited with preserving Platonism and expanded it into Neoplatonisn
Traveled extensively to be with the best minds of the time
Against creation *ex nihilo*, held that creation emanates from an ultimate source – The ONE
The ONE being beyond our conception, devoid of being and nonbeing
Happiness lies only through proximity to the world's creative origin – The ONE
Insisted that earthly fame and fortune are illusions
Eventually came to Rome where he studied, wrote, and taught until death
Avoided all forms of imagery and unfounded superstition

http://www.john-uebersax.com/plato/enneads.htm
http://www.sacred-texts.com/cla/plotenn/enn001.htm

ΠΟΡΦΥΡΙΟΥ
ΦΙΛΟΣΟΦΟΥ ΠΕΡΙ ΑΠΟΧΗΣ
ΕΜΨΥΧΩΝ ΒΙΒΛΙΟΝ Α'.

LOGIC MANUSCRIPT
ITALY C. 1325
TREE OF PREDICATION

Henri Bonnart c. 1690

PORPHYRY: If 'large' and 'small'
were used absolutely
and not with reference to something else
of the same kind as their subjects,
then a mountain could not be called small
nor a millet seed large.
STUDENT: Can you state this argument
in a concise and **syllogistic form**?
PORPHYRY: I can, as follows:
Quantity is predicated absolutely,
while 'large' and 'small'
are not predicated absolutely.
Thus 'large' and 'small' are not quantities.* §
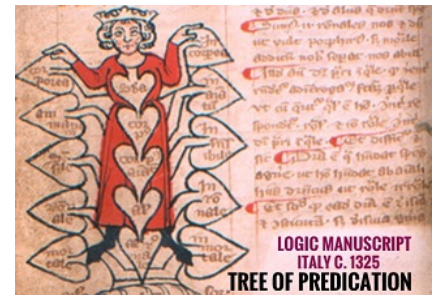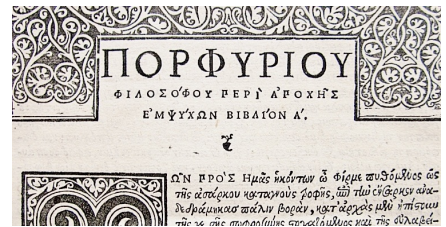
Porphyry

Phoenician, born Tyre, 234
Isagogue
        An introduction to Aristotle's works on logic
        The primary logic text for over 1000 years and even taught well into the 20ᵗʰ century
* Short *Commentary on Aristotle's Categories* (*Great Commentary* unfortunately lost!)
Life of Plotinus   (and compiler/editor of Enneads)
Philosophy from Oracles, Against the Christians, Commentary on Euclid's Elements
Abstinence from Eating Animal Foods, Letter to his wife, Marcella   (of interest---- see 3ʳᵈ link)
Metaphorically, classified all Being as a "Tree of Predicates"
Scholar of great learning, with wide ranging interests, even vegetarianism and ecological preservation
Argued for maintaining a simple lifestyle
Firmly held that reason exercised by a pure mind leads to the true essence of things
Urged intellectual activity to detach the soul from passion and confusions, thereby finding true realities
Attacked Christianity as appealing to irrational mysteries and rituals

§ Similarly, a three meter snake is (quantitatively) three meters in length absolutely, and not only in comparison with other snakes. But whether it is a long snake or a short snake depends on how its length compares to the lengths of other snakes. In a tank with 50 one meter snakes it is long, but with 50 six meter snakes it is short.

When judgment is given
concerning the conjunction of sentences,
it must wait until we come to the culmination of the syllogism.
The conclusion is that which results from concessions
What I am saying is this:
Whoever says "if he is walking, he is moving"
wants to prove something,
so that when I concede that this is true
he needs only to say what walks
and the conclusion will [**logically**] follow
and now cannot be denied, that is, that he moves,
or he simply has to say that it does not move,
so that the conclusion again follows and cannot be denied,
namely that he does not walk.
And again in like manner if someone says "this man walks,"
it is a simple sentence; if I concede this one
and he adds another, "Whoever walks, moves",
and I likewise grant this one,
from the conjunction of sentences,
though uttered singly and conceded singly,
the conclusion follows, which is now of necessity conceded,
namely "Therefore, this man moves".*
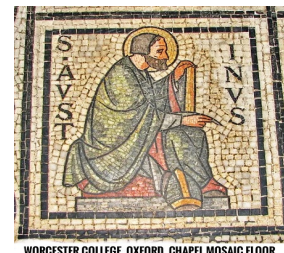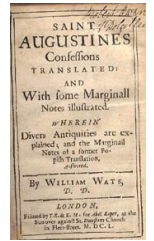
Saint Augustine

Roman African, born Tagaste, 354
* *On Dialectics*   (Augustine credits [Chrysippus](#) for these rules of Logic)
Confessions   (considered one of the most significant autobiographies, ever)
City of God, On the Trinity
Surviving works: 113 books and treatises, 200+ letters, 500+ sermons
Converted to Christianity at age 31, installed Bishop of Hippo (Tunisia) in just nine years
Canonized Doctor of the Church in 1330
Theologian and philosopher, writings significantly formed and infused Catholicism and western philosophy
Theology highly regarded and adopted by Martin Luther and the Protestant Reformation
Led the charge of Heresy against the Donatists and Pelagians
Held that man has God-given Inner Illumination whereby to grasp intelligible realities.
Patron saint of brewers

http://justus.anglican.org/resources/bio/50.html   FIND POSTAGE STAMP

http://www.sophia-project.org/uploads/1/3/9/5/13955288/weber_augustine.pdf

Logic proceeds by syllogisms
in an orderly progression
from principles simple and evident,
to the most remote and complicated conclusions.
Its inherent reasons remain perpetually the same,
firm and durable, and cannot be confuted.
....
She reminds you
of the invisible form of the soul.
She gives light to her own discoveries.
She awakens the mind and purifies the intellect.
She brings light to our intrinsic ideas.
She abolishes oblivion and ignorance
which are ours by birth.*
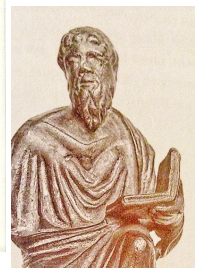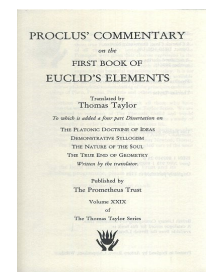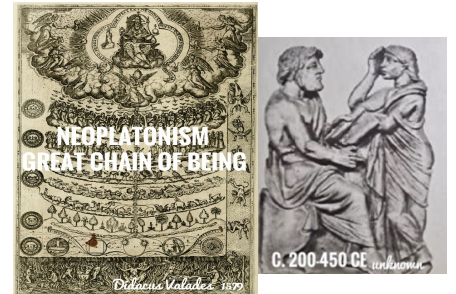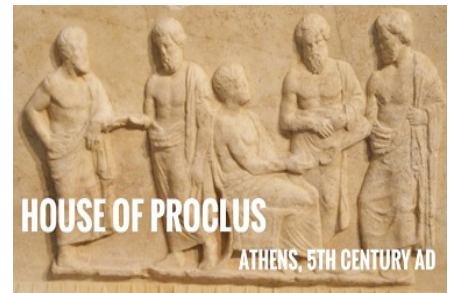
Proclus

Byzantine, born Constantinople, 412
*Commentary on Euclid
Astronomy,   Book of Causes, Elements of Theology
Elements of Physics, Platonic Theology
Scholar, mathematician, commentator
Preserved and transmitted texts from ancient Greece
Student, teacher, and then head of the Neoplatonic Academy
Composed hymns for the polytheistic religion of the time
A life-long vegetarian, and extremely self-disciplined
Lunar crater named for him

http://www.goddess-athena.org/Encyclopedia/Friends/Proclus/index.htm

To prevent reason
from being exercised haphazardly
and to ensure that it be practiced
according to certain rules,
it is good first to discuss
the nature of reasoning itself.
This discipline, **logic**,
is the 'mistress' of discourse.
Logic deals with true
and necessary argumentation
of antecedents and consequents.
The only thing we should consider
is that when one has been asserted,
the other follows by necessity.*

Boethius

Roman, born Rome, 480
Aristotle's Organon (first Latin translation – for 700 years a primary source book in logic)
*On Cicero's Commentary on Aristotle's Topics
On Arithmetic, On Geometry, Foundations of Music
Moved to the Eastern Empire and became trusted advisor and diplomat for King Theodoric the Great
Feared by corrupt aristocrats, was falsely convicted and imprisoned, tortured, and executed
        In prison, wrote *The Consolation of Philosophy,* the ever since enshrined dialogue between
        Lady Philosophy and Boethius, the theme being the transience and illusion of all earthly greatness
        and the superiority of the things of the mind
Arguably instrumental in introducing arabic numerals into Europe
Declared a martyr, never Canonized but regarded a Saint in some locals, feasted on October 23rd
Buried along side St. Augustine in Pavia, near Milan
Lunar and Mercurial craters named for him

https://faculty.georgetown.edu/jod/boethius/boebio.html

Logic [dialectic] and rhetoric are like the clenched fist
and the open palm of a man's hand:
the former pinches words, the latter extends them.
While **logic** is sharper for examining things,
rhetoric is more fluent for those it strives to teach.
Logic sometimes appears in schools;
rhetoric continually comes to the public forum.
Logic teaches very few students;
rhetoric often reaches the whole populace.....
Logical syllogisms follow from here,
where the usefulness and power
of the whole art become clear.
The conclusions of these syllogisms greatly aid the reader
in investigating the truth,
to the extent that the error of deceiving the opponent
by the sophisms of false conclusions may be banished.*

Regarding logic vs/ rhetoric also see [Llull](#), [Bacon](#), and [Hobbes](#).

Dante's *Paradiso*
by Giovanni di Paolo   c. 1445
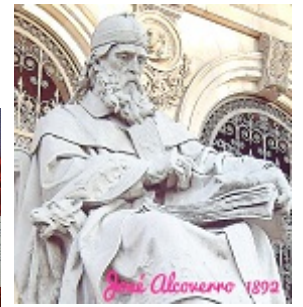
Etymologies

Madrid: National Library

Saint Isidore of Seville

Spanish, born at Cartagena, 560
Etymologies, chapter II
A lengthy encyclopedia of great importance in the preservation of Greco/Roman/Mediterranean sources.
A standard source of knowledge for 1000 years: grammar, science, theology, history, jurisprudence, philosophy,
        medicine, logic, rhetoric, politics, natural science, biography, drama, entertainment, dress, and more
Bishop of Seville, converted Visigoths from Arianism, established schools, endowed libraries
Arguably spared Spain from the Dark Ages; willed all his possessions to the poor
"Last of the great Latin Fathers", "Schoolmaster of the Middle Ages"
Canonized 1598, Doctor of th Church 1722
His two brothers and his sister also Canonized
Antarctic island named for him
Patron saint of the Internet 2002,   the authorized logon prayer:

> **Almighty and eternal God,**
> **who created us in Thy image**
> **and bade us to seek after all that is good, true and beautiful,**
> **especially in the divine person of Thy Only-begotten Son,**
> **our Lord Jesus Christ,**
> **grant, we beseech Thee,**
> **that, through the intercession of Saint Isidore, Bishop and Doctor,**
> **during our journeys through the internet**
> **we will direct our hands and treat with charity and patience**
> **all those souls whom we encounter.**
> **Through Christ our Lord. Amen.**

And The International Order of St. Isidore of Seville–promoting Christian chivalry online

http://www.st-isidore.org

The proper domain of inference is the threefold **logical** tie:
the necessary presence of the reason in the subject of the conclusion,
its necessary presence in similar
and its absolute absence in all dissimilar cases.[§]

....

A **logical** reason does not produce cognition accidentally.
But it produces knowledge by **logical** necessity
as an ascertained case of invariable concomitance.
The function of the **logical** reason is to produce cognition,
and this is just what is meant by ascertainment
of the reason's invariable concomitance with the latter.
First of all, as a preliminary step, we must be certain
that the presence of our **logical** reason is necessarily dependent
upon the presence of the predicated consequence,
we must verify it by trying to find contradictory facts.
We then can proceed to syllogize and avail ourselves
of the general proposition recorded in our memory,
the proposition intimating that its subject
is invariably concomitant with its predicate.

....

There is no absolute necessity
of expressing separately the conclusion.
Supposing the reason has been cognized
as invariably concomitant with the deduced property;
we then know if we then perceive
the presence of that very reason on some definite place,
we already know the conclusion.
The repetition of the deduced conclusion is of no use.*
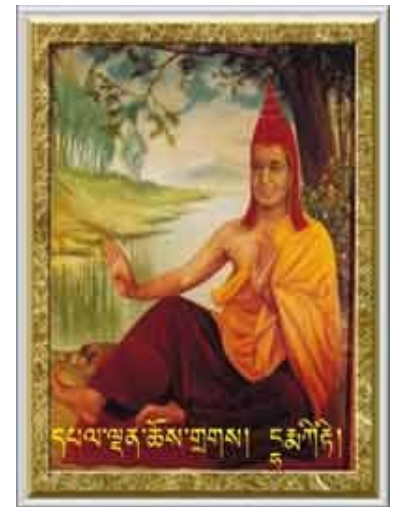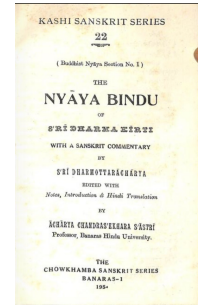
Dharmakīrti

Indian, born Cudamani? c. 615
Drop of Reasoning (Nyayabindu) one of his *Seven Treatises on Valid Cognition*
        (Stcherbatsky translation/interpolation/exegesis)
Raised in a Brahmin Hindu family, then turned to Buddhism becoming an ordained monk
Held that only momentary states of consciousness have real existence
Leading master at the great [Nalanda Monastic University](#) (5th– 7th century)
Lived at the apex of Buddhist philosophy, it then being ousted from India by religious zealousness
Forceful in debate; proud and self-reliant, full of contempt for ordinary mankind and sham scholarship
        "My work will find no one in this world who would easily grasp its deep sayings.
        It will be absorbed and perish in my own person, just as a river in the ocean."

§ In effect, the dictum ["Omni et Nullo"](#)

http://www.wisdompubs.org/book/scripture-logic-language/introduction

http://www.oxfordbibliographies.com/view/document/obo-9780195393521/obo-9780195393521-0085.xml

Kufa crossing

House of Wisdom in Bagdad

Yahyâ al-Wasiti

The mind can perceive
logical forms that are necessary.
However, nothing in sense experience
is necessary.
Thus, the mind can perceive
beyond sense experience.*

translation of [Plotinus](#)

Cryptanalysis

Al-Kindi

Mesopotamean, born Kufa, Iraq, c. 795
*On First Philosophy
Discourse on the Soul
Still highly revered as "The Philosopher" of the Islamic Golden Age
Compiled, and preserved works of Plato, Aristotle, and others from ancient Greece
Scores of books, mostly lost, but several unearthed in 1949
Works on physics, medicine, chemistry, and psychology
Considered the father of cryptology
Introduced Indian numerals into Western civilization
Conducted studies on the use of music to soothe the soul
Beset by intellectual rivals; library confiscated, but then returned

http://www.muslimphilosophy.com/ip/kin.htm

Some concepts (truth, being, necessity)
cannot be clarified beyond the clarity
of the concepts themselves.
For all other concepts,
logic is the science of the methods
by which we acquire them.*
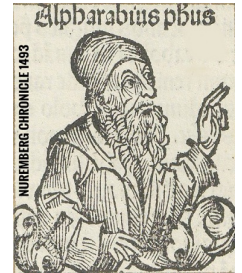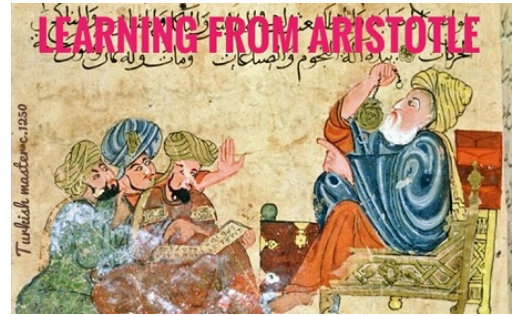
Aristotle translation

Al-Farabi

Eastern Mediterranean, born Farab, Persia, 870
The Enumeration of the Sciences
 Commentary on Aristotle's Logic, Short Treatise on Logic
The Book of Religion, The Book of Music, Meaning of the Intellect
Prominent scholar in virtually all contemporary learning
Taught that rationality in all matters is the path to happiness
Argued that logic, philosophy, and spirituality are the prerequisites of state office
A skilled musician whose tone system remains basic to most Arabian melodies
Proposed music therapy and likely made the first qanoon zither
Said to have been fluent in several dozen languages

http://thegreatthinkers.org/al-farabi/introduction/

Logic is the science of the forms of thinking
that are valid and the forms that are invalid....
The logician reflects on the prior principles
that are appropriate for the sought objects, one by one,
and how these principles lead the inquirer
to the unknown object sought.
Thus the logician must do his best to know
the principles of the explanatory phrase
and the manner of its composition,
be that in the form of a definition or otherwise,
and to know the principles of proof
and the manner of its composition,
be that in the form of a syllogism or otherwise.*

The universal quantifier signifies the universality of the judgment with
respect to the subject, not to the predicate.
For even though the predicate is universal,
the quantifier does not signify that the relation is to its universality, but
rather that the relation is to the universality of the subject.
So that if you say: 'Every man is animal', you do not mean
that animal in its universality belongs to man,
but rather that animal belongs to the universality of man.**§
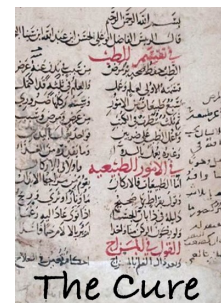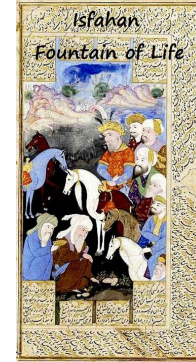
Avicenna (Ibn Sina)

Persian, born Bukara, 980
Remarks and Admonitions on Logic
** *The Cure* (Part Three)
Theology, The Soul, The Book of Salvation
One of the foremost philosophers in the Hellenistic Islamic tradition
Traveled widely but settled in Isfahan
Influenced European medieval philosophy
Revered physician; medical texts becoming standard in Europe for 400 years
Stressed that all reality has logical design, so all knowledge is grounded in logic
Logic being crucial to human development
First to delineate the biconditional
Insisted on a close relation between logic and understanding God
Hounded by clerical extremists
Imprisoned for being on the wrong side in a Sultonic power struggle
Lunar crater named for him

§ Dictum de Omni, cf. Gottfried Leibniz   FIND POSTAGE STAMP

Logic is the study of the methods of proofs, of syllogisms,
of the conditions governing the premises of apodeictic demonstration
of how these premises are to be combined, of the requisites
for a sound definition, and of how the latter is to be drawn up.
Knowledge is either a concept, and the way to know it is definition,
or it is an assent, and the way to know it is apodeictic demonstration.
There is nothing in this which must be rejected..*
****
For example:
All worms are animals.
All animals possess sensory perception.
Thus all worms possess sensory perception.

This is correct because, in saying "All worms are animals,"
you give a description of the worm, declaring it to be an animal.
Its attribute is "animal".
Thus, when you judge that animals possess sensory perception,
or have bodies, or whatever else, you without question
place the worm in this category.
This must necessarily be so, and there cannot be any doubt about it.
Yes, indeed, but the condition for this·
is that the attribute must be equal to or more general
than the subject so described,
so that the judgment expressed encompasses it of necessity.**§
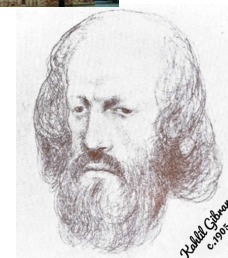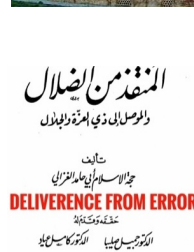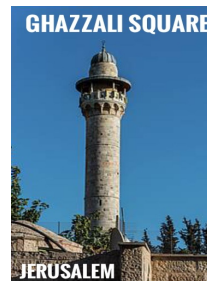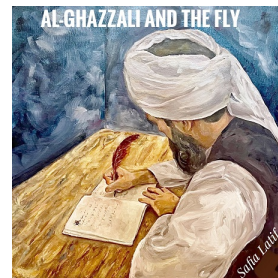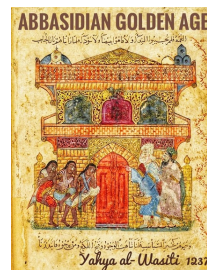
Al-Ghazzali

Abbasidian/Iranian/Persian, born Tus, Khorasan 1058
* Deliverence From Error;   ** The Just Balance
Incoherence of the Philosophers;   The Revival of Religion
Lectured in Bagdad on logic, theology, spiritualism, and law
Teachings still central to orthodox Sunni Islam
Leading figure in the Golden Age of eastern intellectual history
Said that the first teachers of logic are Allah, the angel Gabriel, and Muhammad
Used Aristotelian logic to reject all rational philosophy
Held that experience cannot detect laws of nature or causation
Instead, all events are solely by the direct will of Allah
Thus stood in stark contrast to Al-Farabi, Avicenna, and Averroes
Was an [occasionalist](#) of the highest order
Had five daughters, by the will of Allah

§ The syllogism rule of Distributed Middle Term

http://www.muslimphilosophy.com/ip/rep/H028.htm

If teleological study of the world is philosophy,
and if the Law commands such a study,
then the Law commands philosophy.
....
To master this instrument the religious thinker
must make a preliminary study of **logic**,
just as the lawyer must study legal reasoning.
This is no more heretical in the one case
than in the other.
And **logic** must be learned from the ancient masters,
regardless of the fact that they were not Muslims.*

There is no other way to learn the truth
than through **logic**.**

Averroes (Ibn Rushd)

Moor, born Cordoba Califate, 1126
On The Harmony of Religion and Philosophy
**Incoherence of the Incoherence* – an important step in the revival of learning
Colliget   (large and remarkable treatise on medicine; a major advance worldwide)
Commentaries on Aristotle's *Logic, Physics, Animals, Ethics, Astronomy, The Soul*, and more
A prolific scholar
Largely credited with preserving and transmitting the wisdom of ancient Greece
Challenged and refined Ptolemaic astronomy
Devout Islamic theologian, dedicated to reconciling Faith and Reason
Judge and physician for most of his life
Lunar crater named for him

http://www.neh.gov/humanities/2011/novemberdecember/feature/the-islamic-scholar-who-gave-us-modern-philosophy

Logic is not the knowledge
of the use nor construction of arguments,
but rather the knowledge
of discerning and judging them correctly,
namely why some are valid and some are invalid.*

Logic has made me hated by the world.**

Through doubting we come to questioning
and through questions we perceive the truth.***

Paris

MEDIEVAL SCHOLARS

ELOISA AND ABELARD

Charles Duruzt c.1837

PETRI ABAELARDI

SIC ET NON.

Peter Abelard

French, born Le Pallet, Brittany, 1079
Logic in Response to the Request of our Comrades
**Letters, Heloisa and Abelard*
***Sic et Non   (Yes and No)*
Logic for Beginners
Theology of the Highest Good, Christian Theology
Dialogue of a Philosopher with a Jew and a Christian;   Ethics, Know Thyself, The Story Of My Misfortunes
Leading figure in the revival of learning in early medieval Europe
A lay monk and abbot scholar, never an ordained cleric
Propounded ideas contrary to the established authorities
Judged a heretic for his theological teachings, especially regarding the Trinity, his books burned and Indexed
Transferred to the Abbey St. Denis (above) and other monasteries for the rest of his life
Best known forever since by the shared love of Heloisa and Abelard, resulting in his being castrated

http://bartholomew.stanford.edu/authors/abelard.html   FIND STAINED GLASS   FIND POSTAGE STAMP

The vital spirit of animals constitutes the source
of their organic structure and vegetative processes.
It regulates and quickens the humors
necessary for their animate life,
although it originally took birth from those same humors.
With its subtle energy it vivifies and systematizes large matter
according to its own form,
except so far as it may be hindered by poisonous bodies.
In almost the same way, **logic** has come into existence
as a consequence of other studies,
and these it subsequently organizes and vivifies,
except so far as it may be deterred
by noxious impediments and ignorance.
....
Just as **logic** expedites other studies,
so, if left alone by itself, lies powerless and sterile.
For if it is to fecundate the soul
to bear the fruits of knowledge,
logic must conceive from an external source.*

John of Salisbury
(no known representation)

Anglo-Saxon, born Old Salisbury, 1120
Metalogicon (standard text for several centuries)
Politracticus (primary opus for medieval political theory)
Both written when secretary to Thomas à Becket at Canterbury
Early studied with leading scholars at Chartres and Paris
An eloquent statement of logic's place in learning
Large personal library provides an illuminating depiction of medieval culture
Philosopher, historian, churchman, diplomat, and scholar
Reportedly (??) witnessed the murder of Becket -------------------------------->
Then bishop of Chartres

http://www.bartleby.com/211/1002.html

I taught the first principles of l**ogic**
to William of Soissons who later
invented a device for subduing
the old established principles of **logic**,
for constructing unbelievable consequences,
and destroying the theories of the ancients.
After instructing William, I sent him on
to my friend Adam du Petit Pont [Adam of Balsham].
Perhaps it was there that William reasoned
that the same conclusion may be derived
from a pair of contradictories, [1]
though Aristotle teaches the contrary.*

I wonder that certain men
oppose the thesis that from a per se impossibility
anything whatsoever follows. . . . For doesn't it follow
that if Socrates is a man and not a man,
then Socrates is a man,
but if Socrates is a man, then Socrates is man or a stone.
Therefore, if Socrates is a man and not a man,
then Socrates is a man or a stone.
But if Socrates is a man and Socrates is not a man,
then Socrates is not a man.
Therefore, if Socrates is a man and Socrates is not a man,
then Socrates is a stone.**
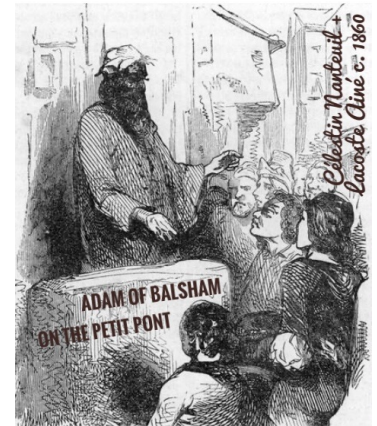
PETIT PONT, PARIS

William of Soissons
(no known representation)

French, born Soissons (?) c. 1090
* In John of Salisbury, *Metalogicon* (1159)
** In Alexander Neckham, *On The Nature of Things* (c. 1190) [2]
Active in the Paris Petit Pont group under Adam of Balsham leadership
Sharp mind and subtle nature but difficulty speaking (acc. William of Trye, medieval chronicler)
Hardly any sources; no known texts, if there ever were any

[1] This subsequently termed the Law of Explosion
Twentieth century proof by C. I. Lewis, [see the proof here}
Paraconsistent logic (1970 fl.) rejects the Law of Explosion, while common sense accepts it as simply a warning to
avoid contradiction. Still in a much wider sense, all parties can agree with Ralph Waldo Emerson, that
 "A foolish consistency is the hobgoblin of little minds."

[2] Alexander Neckham also a student of Adam of Balsham on the Petit Pont
 Neckham translation by Christopher Martin in "William's Machine"
https://www.pdcnet.org/jphil/content/jphil_1986_0083_0010_0564_0572

As for **logic**, the ancient thinkers
do not count it among the sciences,
but rather as an instrument to science.
Indeed it has been said:
One cannot properly study or teach
except by means of the art of **logic**;
for it is an instrument,
and an instrument of something is not a part thereof.
....
A man, when he commences to speculate,
ought not to embark at once
on a subject so vast and important;
he should previously adapt himself to the study
of the several branches of science and knowledge,
should most thoroughly refine his moral character
and subdue his passions and desires,
the offspring of his imagination;
when, in addition, he has obtained a knowledge
of the true fundamental propositions,
a comprehension of the several methods
of inference and proof [**logic**],
and the capacity of guarding against fallacies,
then he may approach the investigation of the subject.*

Consequently,
one who wishes to attain human perfection
must first study **logic**.**
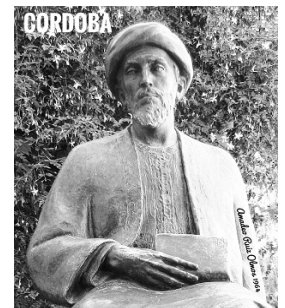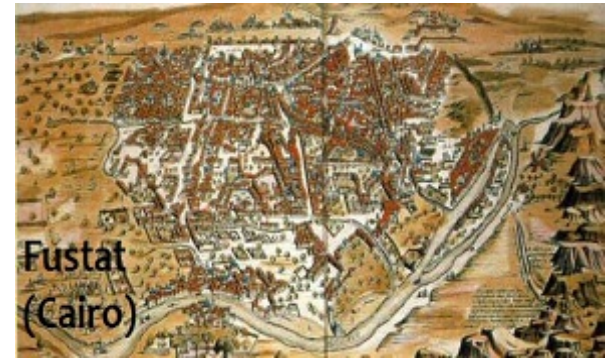
Moses Maimonides

Moor, born Cordoba Califate, 1135
Treatise on Logic
**Guide to the Perplexed*
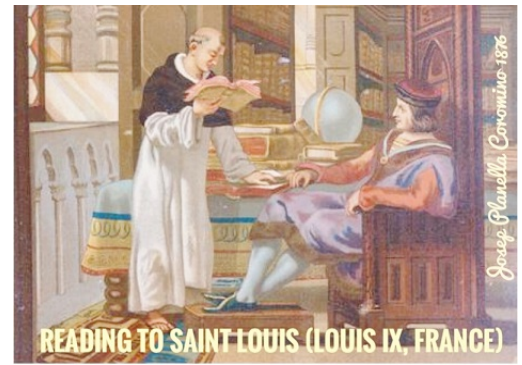Philosopher, historian, logician, theologian, physician, rabbi
Moved all across the southern Mediterranean, settling in Fustat (Cairo)
Sought to reconcile science, philosophy, and religion
Stressed a rational approach to Judaism and all religions
Physician/advisor to Muslim royal families

http://www.jewishvirtuallibrary.org/jsource/biography/Maimonides.html   FIND POSTAGE STAMP

READING TO SAINT LOUIS (LOUIS IX, FRANCE)

CHAINED LIBRARY HEREFORD CATHEDRAL

RAYAUMONT MONASTERY

Logic is the science
of arranging presented propositions
in logical figures to draw conclusions
by which to arrive at knowledge of things said,
and to judging whether they are true or false.*§

sine nomine 1320
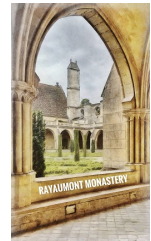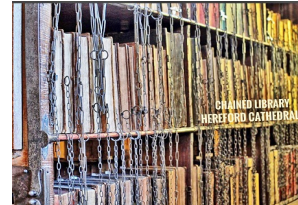
Vincent of Beauvais

French, born Beauvais (?) c.1190
The Great Mirror (*Speculum Maius*) predominant encyclopedia for 500 years
* *Mirror of Doctrine* (logic, rhetoric, geometry, astronomy, anatomy, medicine, law,...)
Also the *Mirrors of Nature, History, and Morality* (a remarkable achievement)
The Moral Education of a Prince,   *The Education of Noble Women*
Dominican brother, pursuing a quiet life of research and reflection
Highly respected reader, theologian, and scholar at Rayaumont monastery
Substantially patronized by Saint Louis (King Louis IX)
Lecturer, teacher, and preacher at the royal court
Honorific: Devourer of Books

§ This is easily and widely misinterpreted.
Since logic can tell only whether or not one proposition is entailed by others (cf. [De Morgan](#)).
Except within Formal Logic itself and possibly mathematics,
logic alone cannot prove the truth of falsity of any proposition.

http://www.vincentiusbelvacensis.eu

Every reasoning used in any discourse comes from **logic**
and is a part of **logic**, whether the discourse employs
a simple syllogism or a demonstrative, dialectical,
or even sophistical syllogism. Therefore **logic** is not
covered completely until every mode and kind of
discourse has been treated in it.

The Dialectical Syllogism proceeds from probables,
in proper syllogistic consequence and often has some
measure of conjecture or invention.

The usefulness of dialectic **logic** is to inform and perfect
the reason with intellectual instruments
and turn it to the externals of the things to be known.§*

§ **E.g., to empirical science, for which Albert the Great is most notable**
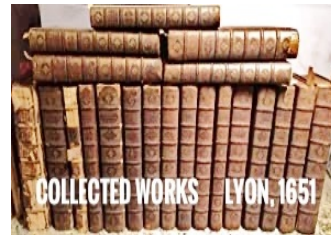
Saint Albert the Great
(Albertus Magnus)

Bavarian, born Lauingen, c.1200
Topica,   *Astronomy*, *Law*, *Plants*, *Music*, *Ethics*, *Music*, *Geometry*, *Animals*, *Love*, T*heology*,...more
Collected works fill 38 volumes
In 1223, pursuant to advice from the Blessed Mother, became a Dominican
First to gather all of Aristotle, with paraphrase, added material, and commentary
Benefitted from Arab sources--Avicenna and Averroes
Professor of Theology in Paris and founder of the University of Cologne (above)
Works encompass virtually the entire body of European knowledge at the time
A truly major compendium and advance in the history of science
Demonstrated that the Earth is a sphere and discovered the element arsenic
> **"Science does not consist simply in believing what we are told,**
> **but in inquiring into the nature of things."**   (*On Minerals*)

Bishop of Regensburg and assigned to preach the Crusades throughout Germany
Recast theology in an Aristotelian framework, while retaining important aspects of neo-Platonism
   This given ever-lasting formulation by his student Thomas Aquinas
Beatified 1622, Canonized 1931, proclaimed Doctor of the Church
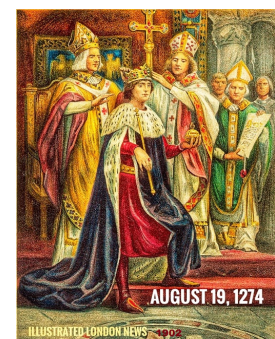Patron saint of scientists and the only Roman Catholic denominated "The Great"
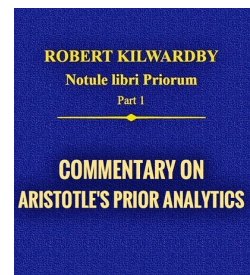Typeface, plant species, and asteroid named for him
Refrained from riding horseback, preferring to walk

http://www.newadvent.org/cathen/01264a.htm

http://mathshistory.st-andrews.ac.uk/Biographies/Albertus.html   FIND POSTAGE STAMP

Even though every science makes discoveries and judgments,
it is only **logic** that determines
the method and technique of discovering and judging...
The method is not determined in any special science,
and so it is determined in **logic**, which is a common science.
Now, the reason why it is absurd to investigate a science
at the same time as the science's method of knowing is this.
The special disciplines are about a determinate genus [eg. Geology]
and relate to the principles of a determinate genus;
and they do not go beyond them.
But the common methods are outside
the determinate principles of a determinate genus.
Hence, the special sciences do not extend
to the common determinative methods.
But the method of discovering and judging
is a method common to many sciences.
Hence, there cannot be determinations concerning it
in any special science.*

Robert Kilwardby
(crowning England's Edward I)

English, born Leicestershire or Yorkshire, c.1215
*Commentary on Aristotle's *Prior Analytics*
Commentaries on the entire *Organon* (widely circulated throughout Europe)
On the Imagination; On Time; Questions over Ethics   The Birth of the Sciences (a major work)
Prodigious output, some not yet properly edited, some still unrecovered
From Dominican friar to Archbishop of Canterbury and Cardinal Bishop of Porto and Santa Rufina
Major contributor to the early and continued prominence of Merton College, Oxford
Largely Augustinian in theology; Left the Canterbury See deep in debt
Thus by opposing Aquinas in certain matters, was forbidden to teach on such matters
Grave site at S. Maria Gradi, Italy heavily damaged amidst wartime bombing

https://books.google.com/books/about/Logic_and_Ontology_in_the_Syllogistic_of.html?id=eDikalQ6UUcC

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Logic is the art with which the logician discovers
the natural connection between subject and predicate,
which is a middle term that leads to
necessary conclusions.
....
Logic is a difficult art to learn,
whereas the general arts[§] are easier.
This is why one can learn more
of a general art in one month
than a logician can learn of **logic** in a year.*

Rhetoric moves a prince to show compassion,
but **logic** moves a prince to enforce justice.**

[§]**Goodness, Greatness, Eternity, Power, Wisdom, Will, Virtue,
Truth, Glory, Difference, Concordance, Contrariety,
Beginning, Middle, End, Majority, Equality, and Minority**

Regarding logic vs/ rhetoric also see [Seville](#), [Bacon](#), and [Hobbes](#).
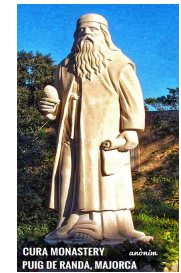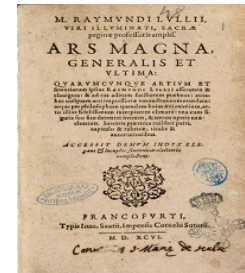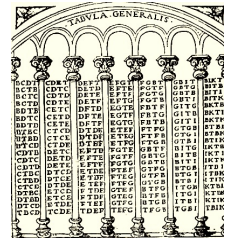
Ramon Llull

Catalan, born Majorca, 1232
Ars Magna
***Tree of Science*
Ars Eleccionis; Book of Propositions;   The Art of Demonstration;   Blanquerna (an early novel form)
Lifelong student of the occult sciences and an acclaimed alchemist (above)
His primary mission: convert Muslims and Jews to Christianity using logical schemes
Sought a semi-mechanical device to facilitate conversion and learning
Contrived fantastic graphs, overlapping calculator cards, matrices, geometric designs
Invented consensus voting plan, MS found in year 2001, but "reinvented" by [Nicholas Condorcet](#)
Now regarded as the first to add relational predicates to Aristotle's syllogistic
Constructed a Tabula Generalis (above) anticipating truth tables and binary logic
Arguably a first step toward calculators, input/output devices, even computers (see "digital" scroll above)
First ever conversion missionary to Muslim North Africa
To learn Arabic, bought an arab slave who rebelled who killed himself
Translated [Averroes](#) commentaries into Latin and Catalan
Several extended missions, possibly martyred in Tunis
For sure wrote 265 works, possibly 400

http://quisestlullus.narpan.net/eng/index_eng.html

http://history-computer.com/Dreamers/Llull.html

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No part of **logic** is about an utterance,
since all effects of a syllogism and all its parts can exist in it,
according to the existence that they have in the mind,
even if they are not uttered, as is satisfingly clear.
Rather it is about something prior,
which in respect of the signifying utterance
has only an account of what is signified.
...
One must say that **logic** is a science,
since the things taught in **logic** are conclusions
on the basis of demonstrations,
as is the case [only] in the sciences. Therefore, they are
objects of scientific knowledge.*[§]
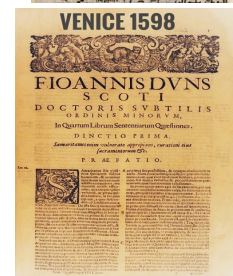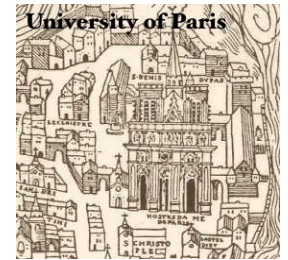
Duns Scotus

Scottish, born Duns, Berwickshire, 1266
Questions on Porphyry's Isagoge: Is Logic a Science?
Ordination, A Treatise on God as First Principle
The Metaphysics, God and Creatures, General Issues
Franciscan friar and ordained priest
A truly outstanding scholar and so named "The Subtle Doctor" by the King of Spain
Studied long and hard at Oxford before his many years as Master at the University of Paris
Highly original and magnificently crafted works in theology, logic, and philosophy
Forced to flee France by his opposition to King Philip's taxation of Church property
Moved to Germany, compiled major studies, but died within two years at age 43
Beatified by Pope John Paul II, 686 years after his death
Emerged during the Renaissance as the personification of "hair-splitting"
The Duns Cap (dunce/fools cap) evolved in the revolt against Medieval style and substance.
Gravestone: **"Scotland bore me, England received me, France taught me, Cologne holds me"**

[§] It is important to bear in mind that in these times, prior to Copernicus, Galileo, and Newton, science ('scientia') was completely a priori (independent of experience and observation). Such things as experimentation and theory (in so far as they existed at all!) were simply nonscientia.

http://www.franciscan-archive.org/scotus/

Bacon conducting a scientific experiment

Matthias Merian c. 1600

BACON'S TOWER

FRATRIS ROGERI BACON ORDINIS MINORUM OPUS MAJUS AD CLEMENTEM IV. PONTIFICEM MAXIMUM PRIMUM A SAMUELE JEBB M.D. LONDINI EDITUM MDCCXXXIII.

Roger Bacon

Logic draws a conclusion
and makes us grant the conclusion
but does not make the conclusion certain,
except through experience......
Our knowledge of the science of **logic**
is derived from nature,
but we are ignorant
of the proper terms at the beginning.
These through their zeal for discovery
the first authors on **logic** have found,
but we learn them by study.
By way of these terms
the formal subject of **logic** exists,
not be because of the potency of the science itself,
but because this is innate in everyone.*
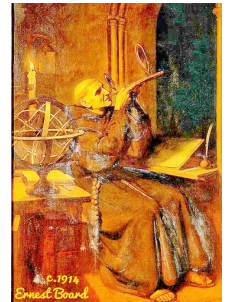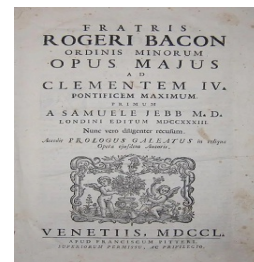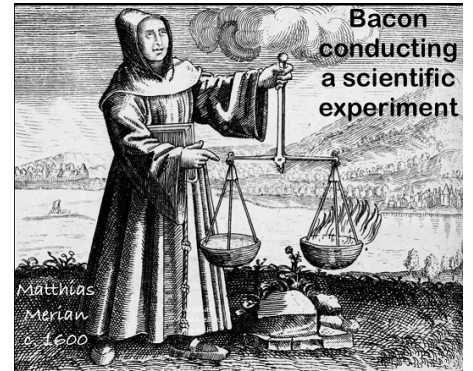
English, born Ilchester, Somerset, 1214
*Major Work
Comprehensive Logic, Minor Work
Comprehensive Reason and Dialogue
Franciscan friar and lecturer at Oxford and Paris
Ostracized by university and church hierarchy
Forced into life as an independent scholar
Then given full permission to write and publish by Pope Clement IV
Produced enormous volumes
Invented the magnifying lens and experimented in optics
Worked with gunpowder and was instrumental in its use in the West
Stressed that all the sciences depend on mathematics
Accused of and imprisoned for promoting demonic ideas
Released, only to die in obscurity

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3705416/

Now reason is not only able to direct
the acts of the lower powers
but is also director of its own act:
for what is peculiar to the intellective part of man
is its ability to reflect upon itself.
For the intellect knows itself.
In like manner reason is able to reason
about its own act.
Therefore just as the art of building or carpentering,
through which man is enabled to perform manual acts
in an easy and orderly manner,
arose from the fact that
reason reasoned about manual acts,
so in like manner an art is needed
to direct the act of reasoning, so that by it
a man when performing the act of reasoning
might proceed in an orderly and easy manner
and without error.
And this art is **logic**, i.e., the science of reason.
And it concerns reason
not only because it is according to reason,
for that is common to all arts, but also because
it is concerned with the very act of reasoning
as with its proper matter.
Therefore it seems to be the art of the arts,
because it directs us in the act of reasoning,
from which all arts proceed.*
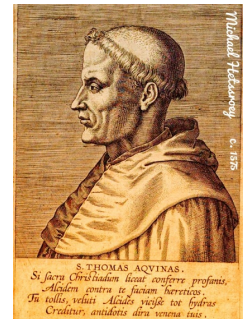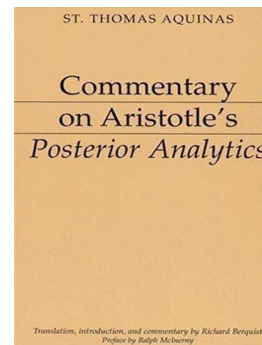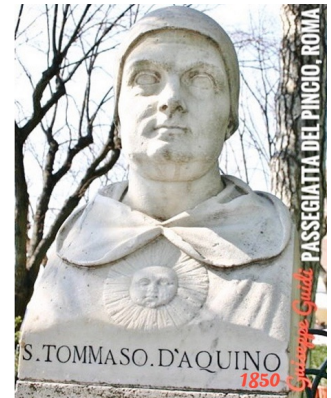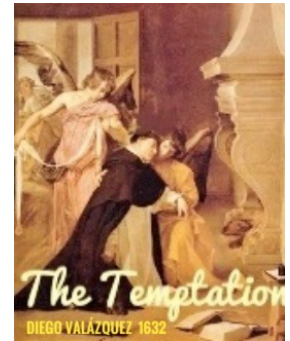
Saint Thomas Aquinas

Italian, born Roccasecca Kingdom of Sicily, Lazio, 1225
*Commentary on the Posterior Analytics of Aristotle
Summa Theologica, Summa Contra Gentiles
His family so appalled at the prospect of his becoming a Dominican,
        Had him imprisoned for two years in Monte San Giovanni Castle (above)
        Even sent an impure woman to tempt him, unsuccessfully, so we are told (above)
While in prison, received the finest education possible
Canonized just 49 years after death, thenceforth his theology highly influential
Always wrote Latin with a "littera inintelligibilis" (unintelligible lettering), decoded 500 years later
        Called on unique scribes to transliterate into ordinary Latin manuscripts
Highly honored by successive Popes, made **"Patron of all Catholic Universities World Wide"**
In 1879 proclaimed the virtually unchallenged authority in Catholic theology

http://www.logicmuseum.com/authors/aquinas/perihermenias/aquinas-periherm-index.htm

FIND STAINED GLASS   FIND POSTAGE STAMP

13th Century DOMINICAN MONASTERY

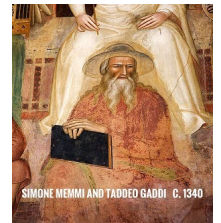Dante's *Paradiso*
by Giovanni di Paolo   c. 1445

Logic is the art of arts, science of sciences,
having the way to the principles of all methods;
for in fact dialectic alone credibly argues
about the principles of all other sciences,
and therefore in the learning of all other sciences
logic must be prior.*

A formal consequence is one that holds
in the case of all exactly similar terms,
the form of arguing
in the exactly similar manner having been retained....
And I am saying something
worth knowing in this definition,
because there are many formal consequences
which do not hold
just in the case of "exactly similar terms".
An example is "A man is an animal; an ass is a animal.
Therefore a man is an ass".**§

§ see similar by [Whately](#) and by [Jevons](#)

THESAURUS PAUPERUM 1490

PETRI HISPANI
SVMMVLAE LOGICALES
CVM
VERSORII PARISIENSIS
CLARISSIMA EXPOSITIONE

SIMONE MEMMI AND TADDEO GADDI C. 1340

Peter of Spain

Iberian, born c. 1200
Summulae Logicales Magistri Petri Hispani   (standard textbook for over 700 years)
**Treatise on Consequences* (appended to *Summulae*, authorship uncertain)
Thesaurus Pauperum (extensive medical remedies, standard for 400 years)
Identity still unresolved, here taken as the Dominican Petrus Ferrandi Hispanus
Sadly nothing known about his life
Long thought to be the Pedro Julião who became the only Portuguese Pope–John XXI
Also possibly a Cambridge Blackfriar
Likely first to hold that petitio principii (that is, circular reasoning)
        is not a fallacy of inference, only a fallacy of proof.
 In Dante's *Paradiso* (see above painting) St. Bonaventura says:
        "Illuminato and Augustine are here;...
        Peter of Spain, who with his twelve books,
   **glows on earth below..."**

http://www.logicmuseum.com/wiki/Authors/Peter_of_Spain/Summulae_logicales/Summulaelogicales

For **logic** is the most useful tool of all the arts.
Without it no science can be fully known.
It is not worn out by repeated use
after the manner of material tools,
but rather admits of continual growth
through the diligent exercise
of any other science.
For just as a mechanic
who lacks a complete knowledge of his tool
gains a fuller knowledge by using it,
so one who is educated
in the firm principles of **logic**
while he painstakingly devotes his labor
to the other sciences,
acquires at the same time a greater skill at this art.*
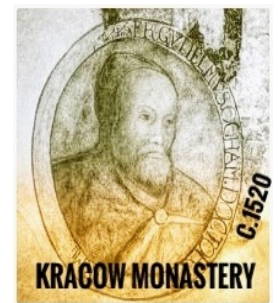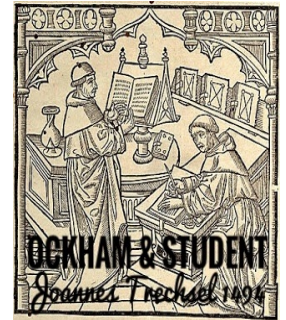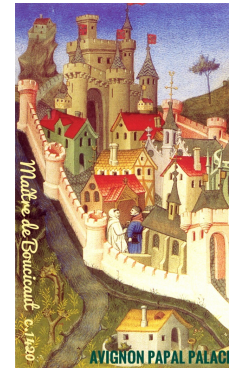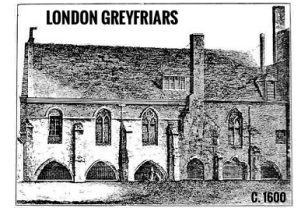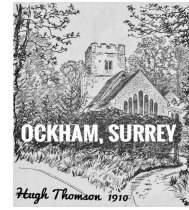
William of Ockham

English, born Ockham, Surrey, 1285
**Summa Logicae*
A Franciscan Friar
Among the most highly regarded scholars of the late middle ages
Best known for Ockham's Razor:"For explanation, use no more hypotheses than necessary."
Argued (contra [Burley](#)) that logical forms are simply abstractions and have no reality in themselves
Studied and lectured at the renowned London Greyfriars monastery (above)
Theological teachings considered so heretical that Papal authority confined him in a monastery
Spent much of his adult life in France and Germany seeking freedom to think and write
Declared Pope John XXII a heretic for opposing Apostolic Poverty
Held in the Avignon Papacy to be severely sanctioned by the Curia
Fled Avignon only to be excommunicated and live the rest of his life hiding
Spent much of the remainder of his life amongst a band of fugitives
Honorifics: Invincible Doctor, Venerable Preceptor, Singular Doctor, Unparalleled Doctor!

http://www.bbc.co.uk/programmes/b007m0w4

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I propose to compile, if God grants it,
a kind of treatise on the purity of the art of **logic**,
so that youths who are arguing about any problem at all
can be trained and can quickly dispose of it.
..
The first rule of inference is this:
In every good simple inference,
the antecedent cannot be true without the consequent.
So if in some possible case, the antecedent could be true
without the consequent,
then the inference was not a good one.....
The second rule is that whatever follows from the consequent
follows from the antecedent.*
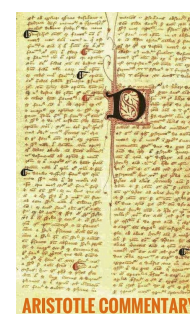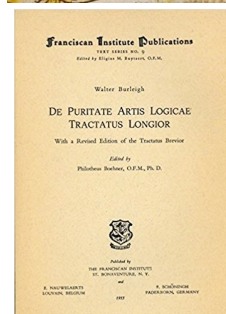
Walter of Burley
(no known representation)

Scottish, born Burley-in-Wharfedale, Yorkshire, 1275
On The Purity of The Art of Logic (widely studied at the time)
On Suppositions, On The Soul's Faculties
Treatise on Forms, Metaphysics
Commentaries on Aristotle's *Physics, Logic, The Soul, Politics, Animals, Motion, Ethics*
Secular Franciscan
Known as the "Plain and Perspicuous Doctor"
Master of Theology at the Sorbonne, Paris
Scholar, diplomat, envoy to the Pope in Avignon
Argued (contra [William of Ockham](#)) that logical forms have a reality apart from our thoughts
Author of more than 50 works
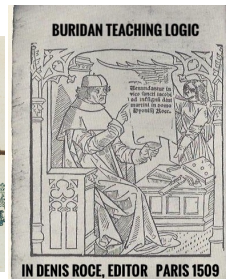Imprisoned, briefly, regarding the illegal felling of two trees in Sherwood Forest

http://www.encyclopedia.com/topic/Walter_Burley.aspx

Logic in one way
infers the conclusion
from the premises
and in another way
it proves the conclusion
by means of the premises.*
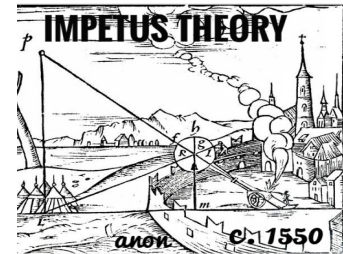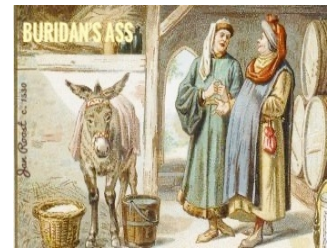
John Buridan

French, born Béthune, 1295
*Questions in Porphyry's Isagoge
Summa de Dialectica , Compendium of Logic
Treatise on Consequences, Commentaries on Aristotle's Organon and Physics*
Major achievements in logic only to be rediscovered 500 years later
University of Paris professor from age 20 until death
A secular cleric, not ordained
Argued forcefully against the extra-mental existence of universals, e.g. Whiteness, Beauty,....
Using experiments, refined the Impetus Theory of Motion, an advance on the road to Newton
Unlike most scholars then (and since!), was well supported by patrons and students
Books banned by King Louis XI
Eponym of Buridan's Ass paradox (above)
As a youth in a boyish scuffle, slapped the future Pope Clement VI

https://www.st-andrews.ac.uk/~slr/Buridan_Octagon.pdf

Provided we assume rules of **logic**, it can be proved
that from something impossible anything follows.
It can be argued as follows:
From Socrates exists and Socrates does not exist,
it follows: Socrates exists.
From this it follows: Socrates exists or man is a donkey.
Also from Socrates exists and Socrates does not exist,
it follows: Socrates does not exist. Behold, therefore,
how from Socrates exists and Socrates does not exist, it follows:
Socrates exists or man is a donkey, and Socrates does not exist.
But from this it follows: Man is a donkey.
In a similar manner it can be proved in regard to anything.
.....
When it is said, "**Logic** is not acquired by **logic**,"
I say: "No, on the contrary,
logic which is knowledge is acquired
through **logic** which is not knowledge;
namely, that which is called
'the apprehension of logical first principles',
which is not called 'knowledge' but 'comprehension'.
Therefore, it is correctly conceded:
"all knowledge is acquired through **logic**,"
but not always through **logic** which is knowledge.
Hence, from the apprehension of logical first principles,
which **logic** but not knowledge,
is produced an apprehension
of a conclusion whose apprehension is knowledge.
Comprehended in this way, I correctly concede
that **logic** which is knowledge is produced from **logic**
which is not knowledge.*

Albert of Saxony
(No known representation)

German, born Rickensdorf, Helmstadt, 1320
Sophismsata
Very Useful Logic, Disputed Questions on Logic
*Question-Commentary on Aristotle's **Physics** and **Heavens***
Leading Master at the University of Paris; first Rector of the University of Vienna
Papal diplomat and Bishop of Halberstadt
Reformulated and solved(?) the "**Liar Paradox**":
   THE FOLLOWING SENTENCE IS TRUE. THE PREVIOUS SENTENCE IS FALSE.
   The question being: Which sentence is true, and which is false? .... **GOOD LUCK!**
Groundbreaking (though false) explanation of the path of projectiles and planetary motion
Knowledgeable in mathematics and wrote on the possibility of squaring the circle
Theories presaged the new astronomy of Copernicus and Kepler
Committed to the wrong side, was captured in the Lüneburg War of Succession, but released unharmed
Possibly a satirical allusion in Chaucer: *The Reeve's Tale*
https://enacademic.com/dic.nsf/enwiki/427431

There are postulates [of **logic**].
Conjunctions and disjunctions
with mutually contradictory parts
contradict each other.
From any disjunction
together with the opposite of one of its parts
the other part is inferred.
If a conjunction is true,
each part of it is true and conversely;
and if it is false,
one of its parts is false and conversely.
And if a disjunction is true,
one of its parts is true and conversely;
and if it false, each part is false and conversely.*§

§ Note the parallel to [Chrysippus](#) , 3rd century B.C.

Thomas Bradwardine

English, born Sussex, 1290
Insolubles, chap. VI (in his remarkable treatise on the [Liar Paradox](#))
On 'It Begins' and 'It Ceases', Speculative Geometry and Arithmatic
On the Continuum; On Future Contingents; Ratio of Speeds in Motion; On Acquiring a Trained Memory
  From Chaucer's "Nun's Priest's Tale":

> **"But I cannot sift the wheat from the chaff, as can the holy doctor Augustine or Boethius
> or Bishop Bradwardine whether God's glorious foreknowledge compels me by necessity to do a thing
> (by necessity I mean absolute necessity), or if I am granted free choice to do or not that same thing,
> though God foreknew it long before; or whether His knowing does not constrains at all except by a
> conditional necessity. With such matters I will not concern myself."**

Secular cleric, came to be recognized as *Doctor Profundus*
Argued for Determinism and that it is compatible with both Free Will and Divine Omniscience
Profound student and Fellow of Balliol College, Oxford, then of Merton College.
Later Chancellor of St. Paul's, London.
Confessor of King Edward III and his warfare-related diplomat
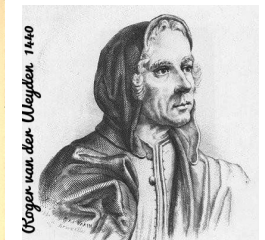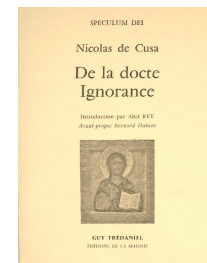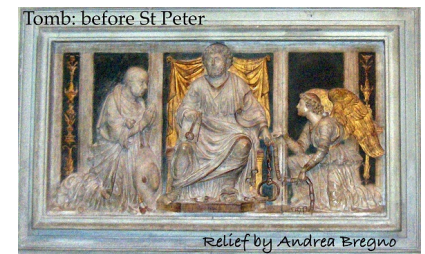Notable advances in mathematics and physics
After much church/state dispute, installed Archbishop of Canterbury, but died of the plague within seven weeks.

http://www.u.arizona.edu/~aversa/scholastic/Dictionary%20of%20Scientific%20Biography/07.%20Bradwardine%20b.%20ca.%201290%20(Murdoch).pdf

READ TOMBSTONE INSCRIPTION

Logic enfolds and unfolds
the power of reason.
Yet, too much of **logic**
can be injurious,
rather than beneficial.*

CUSA HOSPICE

Tomb: before St Peter

Relief by Andrea Bregno

SPECULUM DEI
Nicolas de Cusa
De la docte
Ignorance

(Roger van der Weyden 1440)

Nicholas of Cusa

German, born Bernkastel-Kues, 1401
Defense of Learned Ignorance
On Learned Ignorance, On The Summit of Contemplation, Wisdom and Knowledge
Metaphysical Speculations, Contemplation and Theology, Dialogue on the Hidden God
On Universal Concord, On Seeking God, On the Vision of God
Cardinal, humanist, theologian, philosopher, diplomat, lawyer, mathematician, astronomer, historian
Figured prominently in the transition from the Middle Ages to the Renaissance
A major contributor to the rebirth of learning and the ennoblement of the human spirit
As did Cicero , long before Copernicus, held that Earth revolves on its axis and around the sun
Anticipated the infinitesimal, later developed into the calculus by Isaac Newton
Adumbrated ideas only fully developed nearly 500 years later in Einstein's relativity theory
Oft controversial views tolerated by a still then (but not for long) open minded Vatican
Invented concave lenses for nearsightedness
Heart lies in the chapel altar in a still functioning hospice he bequeathed (see above)

http://www.keplersdiscovery.com/Cusanus.html

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If in a solid [**logically** valid] inference
the antecedent is true,
the consequents also is true;
for although the true can follow from the false,
from the true none other than the true follows.
....
From this rule two corollaries follow:
First, in a solid inference,
if the consequent is false,
the antecedent is likewise false.
Second, if in an inference
the antecedent is true and the consequent is false
the inference is not solid.
....
An inference is solid
where the antecedent is impossible
or the consequent is necessary.*
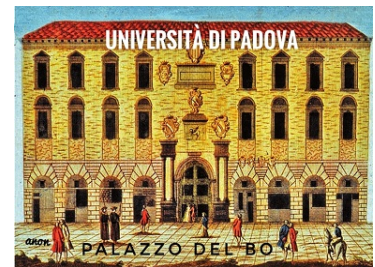
Paul of Venice

Italian, born Udine, 1368
The Small Logic
 The Great Logic;   Golden Sophisms
Summa of Natural Philosophy;   Commentaries on Aristotle
Joined the Augustinian order at the age of fourteen
Doctor of Arts and Theology
Lectured at Oxford, Venice, Padua, Siena, Perugia, and Bologna
Upheld and extended the science of logic amid hostile Humanism and the Renaissance
Served as ambassador of the Venetian Republic to Poland
Was expelled from Venice because of his activity in a political conspiracy
Died while lecturing on Aristotle

http://www.encyclopedia.com/topic/Paul_of_Venice.aspx

All proof arises by true things
which are certain,
and through these things
logic makes other things,
which were previously uncertain,
appear certain.
,...
The syllogism has three components:
the first that proves, a second that is given,
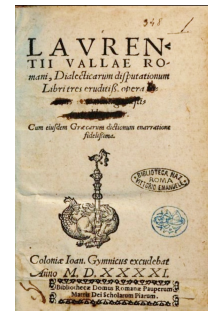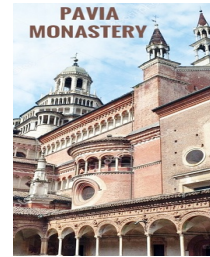and another that follows.
The first two supply the matter
the way that flour and water are the matter
when we make bread,
but not without the help of the hand
which kneads them into dough.
Like the hand, the conclusion
is the blending the previous two sentences.*

Via Francigena near Pavia

Pavia   1550

Lorenzo Valla

Italian, born Piacenza, 1406
Retrenching Dialectic and Philosophy
Elegances of the Latin Language, The Donation of Constantine, Annotations on the New Testament
Leading figure in Renaissance Humanism and the revival of classical learning and style
Professor of Eloquence at the University of Pavia
Rejected contemporary jurisprudence, it being based on medieval rubrics
Tenacious and highly controversial, but protected and supported by the kingdoms of Aragon, Sicily, and Naples
Strongly dismissive of Aristotelian logic and Scholastic pedantry
Discredited Roman emperor Constantine's authorizing Papal temporal rule in western Christianity
Argued that reason, instinct, desire, longing, preference, and pleasure are blessings from God
Held that by departing from common language, theology and philosophy tend beyond our understanding
Rejected the Inquisition and did not believe in The Apostles' Creed
Thereby was endangered and branded an outcast and nonbeliever
Sentenced to be burned at the stake, but reprieved by King Alfonso
Then restored by and became Papal secretary to Nicholas V, himself a Renaissance advocate
Compiled the still standard Latin Vulgate translation of the Bible from Greek
Inspired subsequent vernacular Bibles across Europe
Praised by Protestants for his critiques of Catholic texts
Never married, but had three children by his mistress in Rome

http://www.oxfordbibliographies.com/view/document/obo-9780195399301/obo-9780195399301-0129.xml

In successful discourse,
reason and orderly expression
in the subject matter
must be present.
These are secured by **logic**.
Therefore, **logic** is part of style,
in which perspicacity of argument
outweighs ornament.*

[slightly paraphrased]
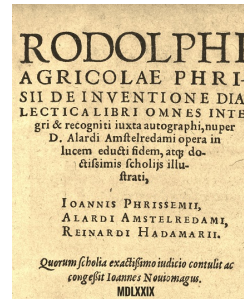
Rodolphus Agricola

Dutch, born Baflo, Groningen, Hansiatic League, 1443
The Invention of Dialectic
Oration in Praise of Philosophy,   *Studies in Humanism*
On Shaping Studies,   *Life of Petrarch,*   *The Nativity of Christ*
Letters (many to ancient Roman authors, such as Quintilian, Seneca, and Lucretius)
Some Questions about the Universals, On the Universal, the Singular and the One
Time in Pavia and Ferrara absorbing the new Humanism
Exceptional figure in the transition out from the Middle Ages
In Dillingen school to study classics and corresponding with other scholars
An independent scholar though sought by universities
Credited as the progenitor of the Northern Renaissance
Formulated new curricula in education stressing science and the arts
Devised a way to teach the deaf to speak
Remunerated as organist at a royal chapel
Reportedly a sportsman, especially boxing

Contemporary biographies
https://library.oapen.org/bitstream/handle/20.500.12657/34474/426371.pdf?sequence=1&isAllowed=y

Young men spend a bare three months
on the study of grammar
before being hurried into sophistry and dialectic
with all their suppositions, embellishments,
restrictions, expositions, resolutions, problems,
and intractable questions.....
And a shallow mind will,
in order to parade a thin layer of knowledge before the class,
import wholly unnecessary difficulty into a lesson;
this happens especially in teaching **logic**.
...
Yet with an argument, it is important to know
in what way and by what means
one proposition depends on another,
with how many arguments
each proposition should be supported,
and with how many confirmations....
So I would not have a boy
wholly ignorant of **logical** rules,
but I certainly decline to have him trained
to deliver those preposterous feats
of dialectical juggling and tumbling
that are so much belauded.*
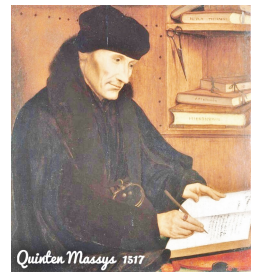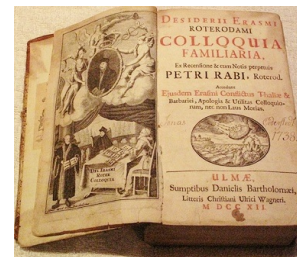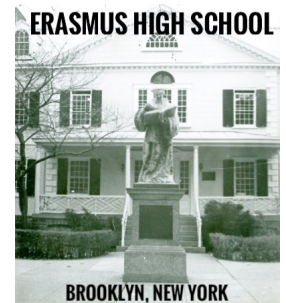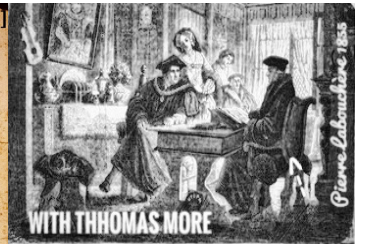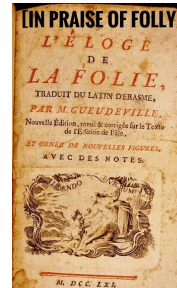
Desiderius Erasmus

Dutch, born Rotterdam, 1466
* "On the Education of Youth"
Adages,   Colloquies (dozens of essays assailing the failings in western civilization)
In Praise of Folly (a masterpiece satire of literature, culture, and religion)
Definitive Greek/Latin *New Testament*, highly respected and a paradigm for all future Bibles
"Complaint of Peace", "Handbook for a Christian Knight", "Freedom of the Will"
As with most Humanists, had difficulty separating logic from the pedantic misuse of logic
Social critic, teacher, humanist, theologian with enormous writings of lasting importance; master of irony
Lifelong devout Catholic priest, but never served as one, worked with England's humanist Thomas More (above)
Attack on the hypocrisy and excesses of the church of great impact on the course of Christianity and society
Though strongly opposed to Martin Luther, has ever since been regarded as presaging the Reformation
Studied/lectured at Queens' College, Cambridge; University of Leuven, and other universities across Europe
Offered several professorship, but mostly preferred life as an independent scholar
Erasmus Hall high school in Brooklyn, New York (above), founded in 1789; statue unveiled in 1931

https://web.archive.org/web/20150329005119/http://www.ibe.unesco.org/fileadmin/user_upload/archive/publications/ThinkersPdf/erasmuse.PDF

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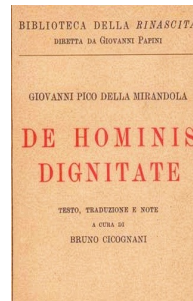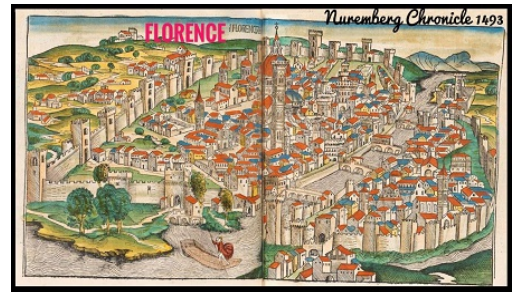
Logic will calm a mind
torn by anxiety and uncertainty
amid conflicting ideas.
May one therefore by **logic**
wash away ignorance,
thus to purify and prepare the soul
toward final perfection.*

Giovanni Pico della Mirandola

Italian, born Modena, 1463
Oration on the Dignity of Man
900 Theses
Strove to reconcile and combine philosophy from antiquity through the middle ages
Arguably the most influential humanist of the era
Set forward an uplifting view of man's place in God's creation
Stressed the importance of empirical science in the quest for knowledge
Greatly influenced by the mysticism of the Jewish Cabala
Argued strongly against astrology
Many years in Florence with the House of Medici
Major work condemned and blocked by Pope Innocent VIII
Died from arsenic poisoning, as discovered 550 years later
Papal librarian before age 16

http://www.safarmer.com/pico/   FIND POSTAGE STAMP

Logic is a plain and a sure way
to instruct us
in the truth of everything.
.....
Of all things the task of **logic**
is the most important one in our church,
for it properly informs our methods,
defines correctly, divines properly,
corrects fittingly, judges,
and separates hideous connections.*
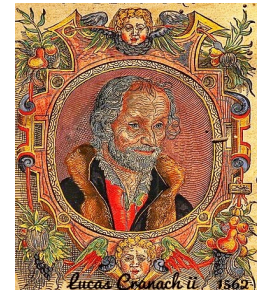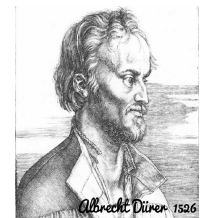
Philip Melanchthon

German, born Bretten, 1497
The Art or Craft of Rhetoric
The Augsburg Confession   (founding theology of the Protestant Reformation)
Theses on Law, Gospel & Faith
Commentaries on *Romans and Colossians* (highly influential)
Alongside Martin Luther, the primary founder of the Protestant Reformation
Scores of works in theology and education
Virtually originated and then implemented public schools throughout Germany
Devised the very first programs of teacher education
In countless public debates, though slight in body and strength, fiercely opposed Catholicism
With his wife Katherine, raised four children and seven orphans
Worked seven days a week, from 2AM to 9PM

http://jps.library.utoronto.ca/index.php/renref/article/viewFile/9059/6024   FIND POSTAGE STAMP

A method of investigation comes next to the study of languages,
a means whereby we can test the true and the false
by simple and well-arranged rules. This is called **logi**c.
Definitions are first explained, which are peculiar to it. Thence we pass
to simple and compound judgments, and lastly to the rules for proof.
This is called the science of logical proof. For this purpose
there are certain recent little books such as by
Lorenzo Valla and Philip Melanchthon.
Then there are Aristotle's books on **logic**,
which contain much that is obscure and, in my opinion, unnecessary.
The teacher should choose what is suited to the age of his pupils
and to the knowledge which he imparting....
Judgment such as is inherent in wisdom, cannot be taught.
It can be driven out or it can be cultivated.
Steps can be taken for its cultivation by the reading
of distinguished authors such as Plato, Demosthenes,
Cicero, Seneca, Plutarch, Origen, and Jerome.
Logic too is helpful being the study of the instrument of inquiry
into truth or what is like the truth (the probable).
From such studies come the greatest light into the mind.....
The practice of **logic** should not arouse a desire for
competition, for that is the spirit of the **logic** itself,
and if strife is added to strife, what else would that
be but throwing oil on a fire, as they say?*

How far can we be expected to tolerate the babblement which
has corrupted every branch of knowledge in the name of **logic**?**
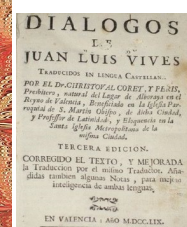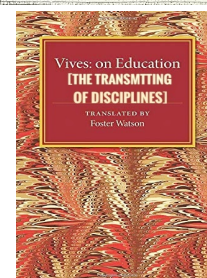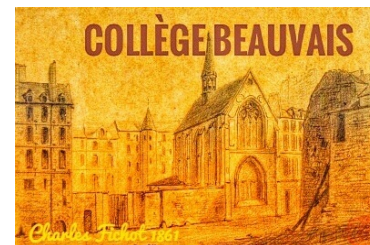
Juan Luis Vives

Spanish, born Valencia, 1493
* *The Transmitting of Disciplines*
** *Against False Dialecticians*
On the Causes of the Corruption of the Arts;   *Dialogues;*   *On Assistance to the Poor*
The Education of a Christian Woman (dedicated to Catherine of Aragon the Queen of England)
Left Spain forever at age 16, his Marrano parents burned by the Spanish Inquisition
Early, suffocated at the College of Beauvais by scholastics who were dolts, dullards, and lax
Later, an unending severe critic of the consequences of scholasticism throughout the arts and society
Long a collaborator with Erasmus at the University of Leuven
Presaged public welfare, women's education, emotivism, psychology, educational reform,.... more
Worked at Corpus Christi College, Oxford with Thomas More and other Humanists
Favored by Catherine of Aragon, but forced abroad for supporting the excommunication of Henry VIII
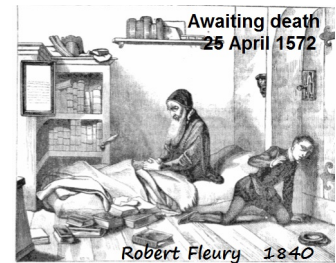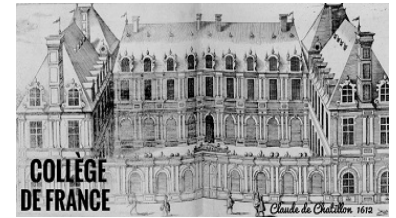Tutor to future Queen of England, Mary I.
Most productive years during retirement in Bruges
Dismissed the Liar paradox as logically ridiculous and not worth discussing

http://www.ibe.unesco.org/sites/default/files/vivese.pdf

Logic seeks to establish the all-around strength
of the human reason
in discovering and dealing with matters.*

Logic is the art that teaches us to dispute well.
The first part teaches to create an argument.
The second part teaches us to order
and arrange the argument to the end
that we may judge it rightly
whether the question raised in the argument
is necessarily inferred in the conclusion.**
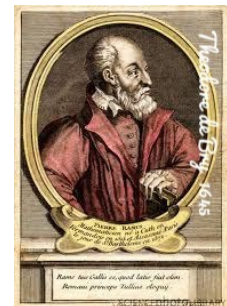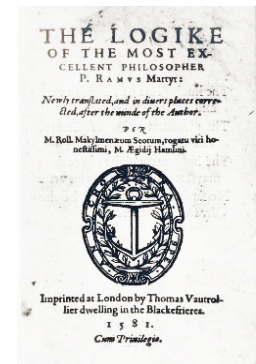
Petrus Ramus

French, born Cuts, Picardy, 1515
*Comments on Aristotle
**Logic
Arguments on Rhetoric, Lectures on the Liberal Arts,
Professor of Eloquence at l'Collège de France (above)
Dozens of books and pamphlets
A flaming critic of Aristotle and both the content and style of medieval learning
Insisted that the logical method of moving from general to specific is identical in every context
Stressed that logic cannot substitute for creativity in the progress of mankind
Lectures often drew many hundreds of listeners
His writings and lectures often censored
Being a Huguenot (Protestant) convert, his home burned, life imperiled, and forced into a life of travel
Returned to Paris only to be murdered in the St. Bartholomew's Day Massacre, 25 April 1572 (above)

http://www.apuritansmind.com/puritan-favorites/peter-ramus-petrus-ramus-1515-1572/

Aristotle's division of simple motion
into three types:
away from the middle,
toward the middle,
and around the middle,
will be construed as merely
an exercise in **logic**.*
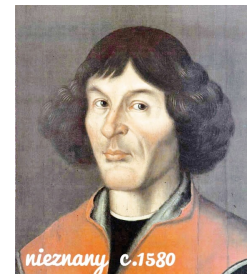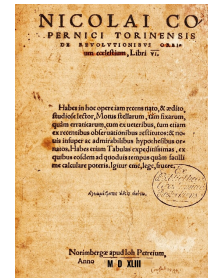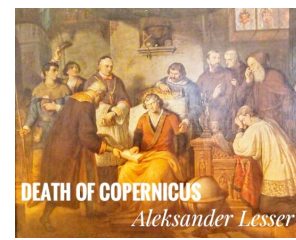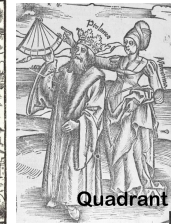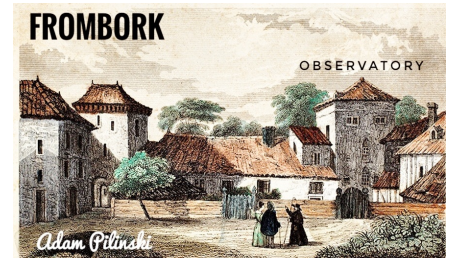
Nicolaus Copernicus

Polish, born Toruń, Royal Prussia, 1473
*On the Revolutions of the Celestial Spheres
Commentariolus
Mathematician, physician, cleric, translator, jurist, diplomat, artist, governor, militarist
Administrator of Canonry in Frombork,Warmia
Astronomer and one of the half dozen most important scientists in history
Next after Galileo, widely regarded as a founder of the scientific method
First to fully formulate the heliocentric model
Never claimed heliocentrism a fact, only a theory
As "just a theory", was viewed favorably by Pope Clement VII
Fearing scorn, delayed publication until just before his death
Large personal library looted by Sweden and still in Uppsala University
Rejected astrology as ignorant superstition
Died 65 years before telescope, used only Ptolmaic (!) triquetrum and quadrant (see above)
Lunar and Martian craters named for him

http://www.bede.org.uk/copernicus.htm   FIND POSTAGE STAMP
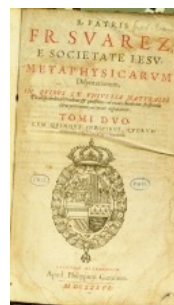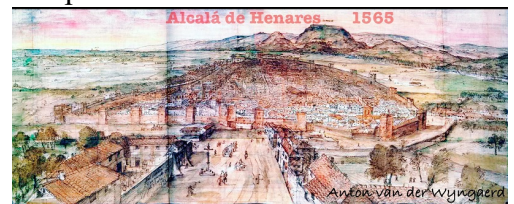
Braun & Hogenberg

Logic is only a certain art
directing the operations of the intellect,
as they are cultivated artificially and with reason.
Hence, **logic** deals directly with mental concepts
insofar as they can be directed through art
or with the form and ordering of concepts.*

preserved hall

Universidad de Sevilla

Alcalá de Henares   1565

Anton van der Wyngaerd

Francisco Suárez S.J.

Spanish, born Granada, Andalusia, 1548
Metaphysical Disputations   (most widely read philosophy work of the time)
On Angels, On The Soul, On Charity, On Law, On Faith, On the True Mysteries of Christ
On Transubstantiation, On Double Effect
Works fill 26 volumes
Jesuit priest titled "Doctor Eximius et Pius" (Exceptional and Pious) by the Vatican
His first lecture in Rome attended by Pope Gregory XIII
Lectured at schools in Seville and Alcalá de Henares (above)
Private tutor for Pope Paul V
Chosen to refute Protestant errors of the King James Bible, his works then burned in London
Raised strong objections to slavery and also the divine right of kings
Writings entangled in the political/Vatican-Curia/anti-Jesuit turmoil of the next 150 years
After death, some of his works indexed by Rome, banned in Paris

http://www.sydneypenner.ca/suarez.sohtml

It is necessary that the human soul
have the light, the ingenuity,
and instruments adopted
to possess its own prey.
Toward such an end
contemplation gives assistance,
and toward this end **logic** is used,
the organ most adept
for the acquisition of truth,
for distinguishing, exploring,
and making judgments.*
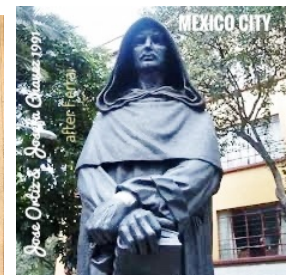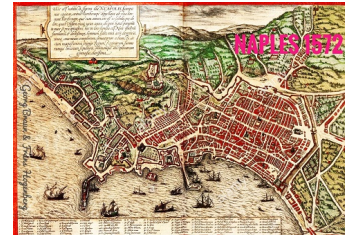
Giordano Bruno

Italian, born Nola, Kingdom of Naples, 1548
*The Heroic Frenzies [Heroici Furori , I, ii; dedicated to his friend the English poet Sir Philip Sidney
The Nolan, The Shadow of Ideas, On the Infinite Universe and Worlds, Art of Memory
Ordained priest at age 24, renounced his vows at 28
Became known for his skill in the art of memory
Insisted that the dogmas of the church cannot be proved by human reason, contrary to Ramon Llull
Held that only the ignorant can take the Bible literally
Argued that Christianity is entirely irrational and that revelation has no scientific basis
Abhorred the Method Of Authority, in any context
Developed a cosmology grounded on the concept of infinity
Theorized that life forms exist on a plurality of worlds elsewhere in this infinite universe
Spent 20 years in exile
In a Papal prison for 10 years for heresy, atheism, blasphemy, sorcery, etc.
Tortured by the Inquisitor, then burned at the stake
Last words**: “You my judges, pronounce this sentence on me with greater fear than I receive it.”**
Year 2000 (!), Papacy defended Bruno's execution: **“The Inquisitor promoted the common good.”**
Lunar crater named for him

http://www.theharbinger.org/xvi/971111/birx.html   FIND POSTAGE STAMP

Chrysippus said that
what Plato and Aristotle wrote about **logic**
must have been written
for sport or as an exercise,
for he could not believe that
they had anything serious to say
on so empty a subject.*
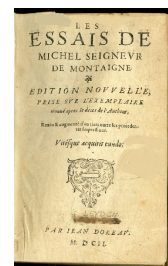
Michel de Montaigne

French, born Saint-Michel-de-Montaigne, Aquitaine, 1533
Essays, Book Two, Chapter 12
Statesman, advisor, and famed essayist
Early a bon vivant courtier
Later, a secluded retirement in his Tower to finish the *Essays*
Remarkable and timeless insights and advice on the human condition
For example: "The best marriage is a blind woman and a deaf man."
            "Knowledge is Power."

https://archive.org/details/the-complete-essays-montaigne-michel-de-1533-1592/mode/2up

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The end of **logic** is to teach a form of argument
to secure reason, and not to entrap it.
The end of morality is to procure the affections
to obey reason, and not to invade it;
and end of rhetoric is to fill the imagination
to second reason, and not to oppress it.
For these abuses of arts come in but obliquely.....
We conclude, that rhetoric can no more be accused
of coloring the worst part of imagination,
than **logic** of teaching sophistry.
For we know that the doctrines of contraries are the same,
though their use be opposite;
and **logic** does not only differ from rhetoric,
according to the vulgar notion,
as the first is like the hand clenched,
and the other like the hand open;
but much more in this, that **logic** considers reason
in its natural state, and rhetoric as it stands in vulgar opinion;
whence Aristotle prudently places rhetoric
between **logic** and ethics, along with politics,
as partaking of them both.
For the proofs and demonstrations of **logic**
are common to all mankind,
but the proof and persuasion of rhetoric
must be varied according to the audience
like a musician suiting himself to different ears.*

Therefore, with **logic**, judgment, and invention,
a person may do great things.**

Regarding logic vs/ rhetoric see Seville, Llull, and Hobbes.

Francis Bacon

English, born London, 1561
*Of The Advancement of Learning, **Essays ("Of Riches"),   The New Science*
New Atlantis   remarkably accurate predictions (see illustration and legend above)
Viscount St. Albans, Lord of Verulam. jurist, scientist, Member of Parliament, Lord Chancellor
A highly significant figure in the development of modern western civilization
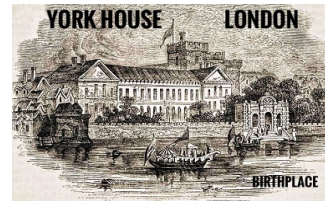An early formulation of the scientific method
Questionably imprisoned, censured, and disgraced for corruption (see illustration above)
Retired to private life to continue study and long-lasting publications
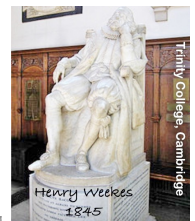Believed by some to be the true author of Shakespeare's plays
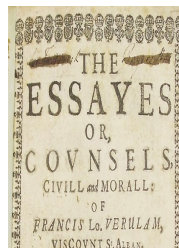Instrumental in colonizing North America, especially Virginia and Newfoundland
Died from pneumonia after trying to freeze a chicken

http://www.ditext.com/broad/bacon.html   FIND POSTAGE STAMP

The intellect, by its native ability makes for itself
intellectual instruments [principles of **logic**],
whereby it acquires strength
for performing other intellectual operations,
and from these operations again fresh instruments,
or the power of pushing its investigations further.
...That this is the path pursued by the understanding
may be readily seen when we understand
the nature of the method for finding out the truth
and of the natural abilities so necessary
for the construction of complex instruments
and for the progress of investigation.*

People prefer to be taught by experience rather than
deduce their conclusion from a few axioms
and set them out in **logical** order.**
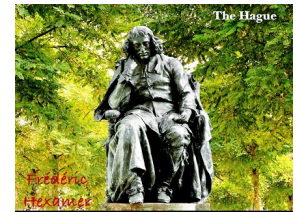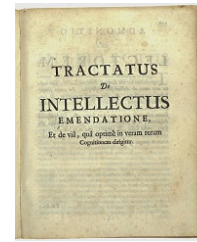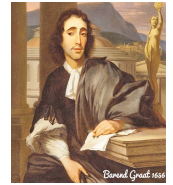
Baruch Spinoza

Dutch, born Amsterdam, 1632
*On the Improvement of the Understanding
**Theological-Political Treatise
Ethics
Of Portuguese-Jewish descent
Then turned to developing independent and novel metaphysics
Judged a heretic, was banished from Judaism at age 24
Argued that mind, body, and all that exists are aspects of one underlying "substance"
Insisted that creator and creation are inseparable
Held that human actions are guided by self-preservation– not by free will
Employed as a lens grinder, and also supported by friends
Well respected and often sought out by leading scholars
Offered Heidelberg professorship, but declined
Never Christian, yet revered by local Protestants and buried in a sacred plot
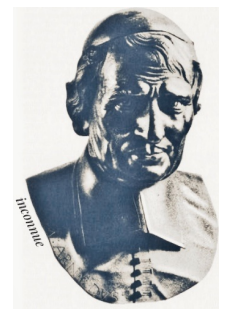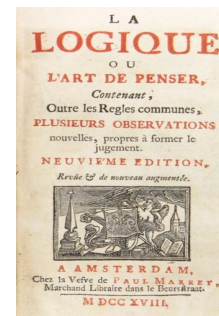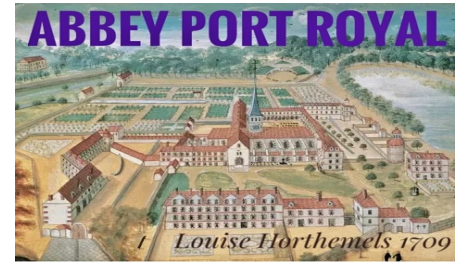
http://www.friesian.com/spinoza.htm   FIND STAINED GLASS

By reflecting on thoughts,
we can notice which methods
are used when reasoning well
and which cause mistakes.
We can then form rules
based on these reflection
to avoid being caught off guard
in the future.
This properly speaking is called **logic**:
a light capable of dissipating
all the darkness of the mind.*

Antoine Arnauld

French, born Paris, 1612
Port-Royal Logic, The Art of Thinking   with Pierre Nicole ------>
General and Rational Grammar, On True and False Ideas
New Elements of Geometry, Reflections
The pre-eminent model for all logic texts for more than three centuries
But accepted the new "scientific" materialism opposing Aristotle and Aquinas
Entire life embroiled in the religious and social turmoil of the times
Removed from the Sorbonne because of his theology, hounded thereafter
Often found refuge with his sister Angálique, Abbess of Port-Royal-de-Champs
Both he an Angáligue prominent advocates of ill-fated Jansenism
First condemned, then restored, re-condemned, and re-restored by successive Popes
Works total 40 large volumes
The youngest of twenty children

https://archive.org/details/artofthinking00arnauoft

He that is happy in a sound Sense and right Judgment
can bear no other manners,
nor any other Principles of Reasoning,
but those of Aristotle.
And because the World being governed by Opinion,
commonly disputes against Reason
the most knowing and intelligent Ages,
have chiefly distinguished themselves from others
by the Veneration they have had for this **Logick**.
For to say the Truth, what he has performed
in order to the fixing and rectifying of Reason,
by cutting off all Equivocation in Terms
and Confusion in Thought,
is one of the greatest Masterpieces of humane Wit,
yet it must be Confessed
that the chief Aim and Scope of this **Logick**
is not so much to teach Men the Art of true Reasoning,
which they naturally know,
as to give them Rules for the Trial and Scrutiny
of false Reasoning.*
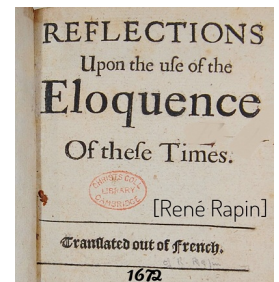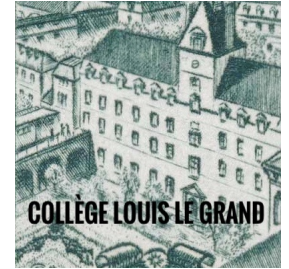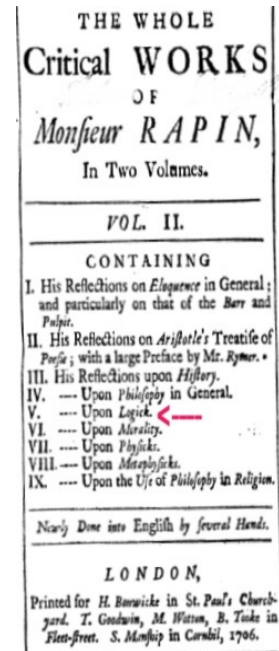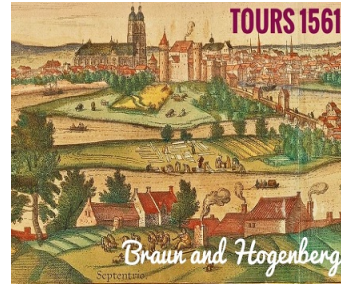
René Rapin S.J.

French, born Tours, 1621
*Reflections on Eloquence, Philosophy, Logic, Pulpit, Law, Morality, Physics, Metaphysics,....
Book of Gardens   (an extensive Latin poem that established Rapin as a foremost Latin versifier of the era)
The Spirit of Christianity; The Poetics of Aristotle as to Ancient and Modern Poets; Sacred Eclogues
History of Jansenism; Observations on The Poetry of Horace and Virgil
Professor of Rhetoric at Jesuits' Collège de Clermont (becoming Collège Louis le Grand)
Wrote extensively in both verse and prose
Advocated tolerance in all matters of religion especially toward the rival Jansenists
A recognized source for the grandiose gardening schemes of the next 150 years

https://catalog.hathitrust.org/Record/100025841

https://books.google.com/books?id=NHFBAAAAYAAJ&printsec=frontcover&dq=ren%C3%A9+rapin&hl=en&sa=X&ved=0ahUKEwikx6-wr5nNAhVRIFIKHQrBC90Q6AEIQjAH#v=onepage&q=ren%C3%A9%20rapin&f=false

Having previously given some attention to **logic**,
I found that its syllogisms and the majority
of its other precepts are of avail rather
in the communication of what we already know,
or even as the art of Lully,
in speaking without judgment
of things of which we are ignorant,
than in the investigation of the unknown;
and although this science contains indeed
a number of correct and very excellent precepts, there
are, nevertheless, so many others,
and these either injurious or superfluous,
mingled with the former,
that it is almost quite as difficult
to effect a severance of the true from the false
as it is to extract a Diana or a Minerva
from a rough block of marble.*
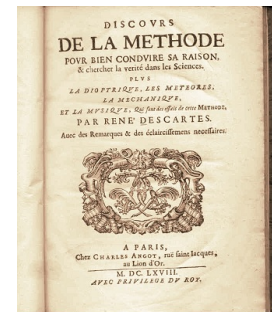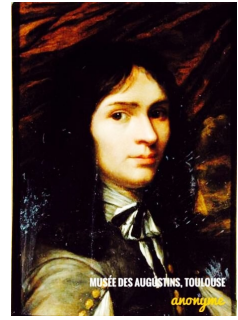
An unfortunate overreaction to medieval scholasticism

René Descartes
(with Sweden's Queen Christina)

French, born La Haye, Touraine, 1596
Discourse on Method
The Principles of Philosophy, Meditations, Rules for the Direction of the Mind
Seminal philosopher in the transition from the Renaissance to the Age of Enlightenment
Insistently reasoned that mind and body are entirely separate substances
Held that the universe is a mathematically designed machine
Argued that the non-existence of God is logically impossible
Introduced analytic geometry and algebraic methods anticipating the calculus
Fearing Vatican reprisal, delayed (even forbade) some publications
Lunar crater named for him
Outside in Sweden's winter before 5:00 A. M. to tutor Queen Christina and died of pneumonia

https://www.biography.com/scholar/rene-descartes   FIND POSTAGE STAMP

The subject of **logic** covers all those things
of which mind-independent being is predicated.
Formal **logic** by itself proceeds from and to
that which must be considered intentions of the mind,
which are apart from the nature of things.
And this is why it can be said
that a logical proof is provisional or tentative....
Even so, a formal proof should succinctly and distinctly
be proposed as syllogism that contains three propositions,
which are called the major premise, the minor premise,
and the conclusion connected by the sign of deduction,
which is the particle 'therefore'.
Care must be taken that the deduction be valid.
For example: "Whatever opposes true human virtue
ought not to be embraced;
a voluptuous life opposes true human virtue;
therefore it ought not to be embraced."
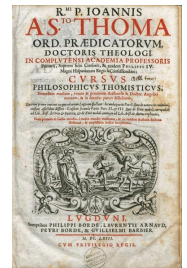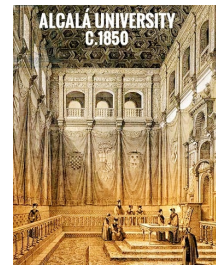
John Poinsot

Portuguese, born Lisbon, 1589
When ordained a Dominican, took the name John of St. Thomas
The Art of Logic; Philosophy Courses; Theology Courses
Student at Louvain, professor at Plasencia; philosophy/theology chair at Alcalá
Major figure in late scholasticism and laid the foundations of semiotics
Masterfully coalesced ancient, medieval, and Renaissance philosophy
Though an Inquisition interrogator, often successfully defended the accused
At age 54 called away from academe to be royal confessor/advisor
Accompanied Spain's Philip IV on military campaigns
At King's request wrote *Treatise on a Happy Death*
Unhappily, death at age 55; reportedly poisoned by jealous aristocracy

https://cpb-us-e1.wpmucdn.com/sites.dartmouth.edu/dist/f/173/files/2013/08/Semiotic-of-Poinsot.pdf

https://www.nytimes.com/1986/03/30/books/a-signifying-man.html

Logic is the art of correct thinking.
Its principles can be divided into four parts:
simple apprehension, the proposition,
the syllogism, and order.*

Nothing can be proved by syllogism
except by Begging the Question [*Petitio Principii*],
that is, by concluding the same from the same.**§

In a syllogism that has premises
that are contingent or probable,
the conclusion that it proves
acquires a measure of doubt
and is thereby an opinion.*
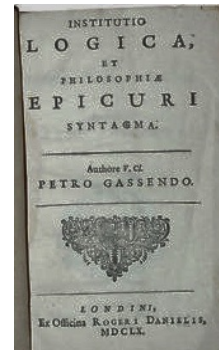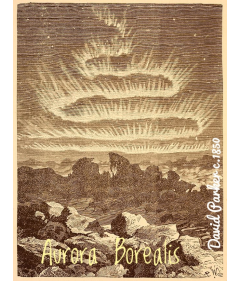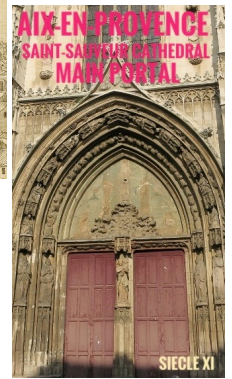
Pierre Gassendi

French, born Champtercier, Provence, 1592
Instructions in Logic
**Paradoxical Exercises Against the Aristoteleans*; *The Philosophy of Epicurus*
Catholic priest, philosopher, theologian, astronomer, physicist, logician, cartographer
Doctorate at the University of Avignon and professor at universities in Aix and Paris
Strove against the prevailing unquestioned acceptance of Aristotle as the authority on science and philosophy.
Much in favor of the empiricism of Epicurus and Lucretius
A healthy skepticism while seeking knowledge through observation instead of dogma
Demonstrated a new theory of motion by dropping objects on a moving ship
First to chart the transit of the planet Mercury across the sun and first to observe the Orion Nebula
Challenged the philosophy of René Descartes, even in public debate
A firm supporter of Copernicus and Galileo, produced experiment in support of the theory of Atomism
Denominated the northern lights "Aurora Borealis" (above); awarded a lunar crater
Deserving of more notice in the History of Ideas

§ A remarkable anticipation of [John Stuart Mill](#), 200 years later

http://www.bu.edu/wcp/Papers/Logi/LogiFish.htm   very highly recommended

Proofs are, in rhetoric,
either examples or enthymemes;
as in **logic,** inductions or syllogisms.
For an example is a short induction,
and an enthymeme a short syllogism;
out of which are left, as superfluous,
that which is supposed
to be necessarily understood by the hearer;
to avoid prolixity, and not to consume
the time of public business needlessly.
....
In the hands of the theologian,
logic, or the art of reasoning,
was nothing more than an unintelligible jargon,
calculated to support sophism,
to countenance falsehood,
to attempt to prove
the most palpable contradictions.§*

Regarding logic vs/ rhetoric also see [Seville](#), [Llull](#), and [Bacon](#) .
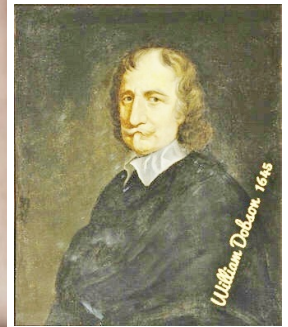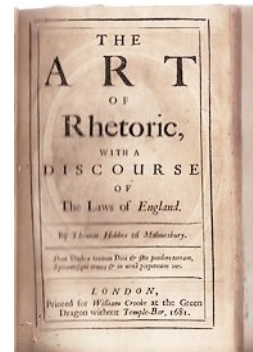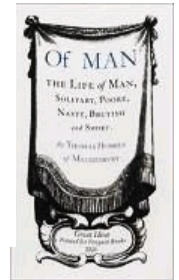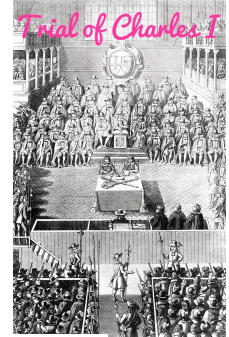
Thomas Hobbes

English, born Westport, Wiltshire, 1588
* *The Art of Rhetoric Plainly Set Forth*
Leviathan– The Matter, Form, and Power of a State (classic in modern Political Philosophy)
The Elements of Law, Natural and Politic, Man and Citizen, Common Laws of England
B.A. Magdalen Hall, Oxford; but never a fellow of any college
A tutor in aristocratic circles; philosopher and private scholar
Collaborated with leading figures: [Bacon,](#) Mersenne, [Descartes](#), Galileo,....
Masterfully portrayed life without civil authority as **"poor, nasty, brutish, and short"**
Thus for protection, emerges a social contract, civil society, and rule by a sovereign
Works largely engendered by the Civil Wars and King Charles I (above)
At root an empiricist, convinced that all ideas come through and are grounded in sensation
A heated exchange with [John Wallis](#) on Squaring The Circle–Hobbes the loser
Many years in Paris to avoid entanglement in England's treacherous upheavals
His last words **"A great leap in the dark"**

§ I. e., Given a statement that is logically <u>derived</u>. from premises, if even one theologian's premises is false (muddled, incomprehensible....), that statement has not been <u>demonstrated</u>.

http://faculty.history.wisc.edu/sommerville/367/367-091.htm

http://www.nlnrac.org/earlymodern/hobbes

I claim that under the name of **logic**
we will understand such a science
that directs apprehension, judgment, and argumentation....
I am about to introduce new **logic**, truly oblique [relational],
about which the ancient logicians said nothing, or very little.....
I say I am about to introduce **logic** wholly distinct
from the old one and based on opposite foundations....
Though I have no intention to destroy ancient **logic**,
I claim that the foundation of the Aristotle's l**ogic** is useless
[i.e. *two things each equal to a third are equal to each other]*.
[Assuming instead that *two things that are related to a third*
are related to each other],
I set out on a new way, with really distinct terms
from which I create new propositions and new syllogisms.*

But which bad things would occur in the world if, *per impossibile,*
two **logically** contradictory propositions would be true together
Or, what if, *per impossibile*, one and the same proposition
would be both true and false?
I answer: then in the whole world not a single truth would remain.**

Juan Caramuel y Lobkowitz

Spanish, born Madrid, 1606
Rational Philosophy (mistitled *Rational Theology* by the printer)
**New Subtleties in Language*
Two-Headed Mathematics (a complete encyclopedia of the mathematical sciences)
A remarkable polymath, long overlooked; doctorate in theology from the University of Louvain
Works on grammar, poetry, oratory, mathematics, astronomy, architecture, physics, politics, law, theology...
Efforts in the logic of relations later refined by Hamilton, De Morgan, and Peirce
A Cistercian, received at La Espina monastery (above)
Spoke twenty languages including Latin, Greek, Arabic, Syriac, Hebrew and Chinese
Significant work in modal logic and philosophy of law
Sought solutions to theological problems through mathematics
A military leader successfully defending Prague when attacked by Sweden in the Thirty Years War (above)
First to publish work on binary numbers
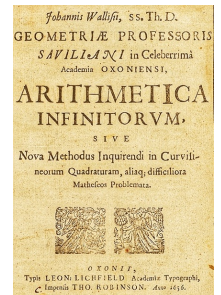Published a collection of puzzles and proposed a new method of trisecting an angle
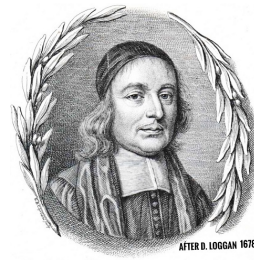Developed a longitude finder using the position of the moon; argued for the creation of a universal language
Advocating Probabilism thereby earning the derisive sobriquet "Prince of the Laxists"
While bishop there, designed and supervised the west facade of the Vigevano Cathedral (above)

http://kfcmtf.upol.cz/uploads/Dvorak/Caramuel080702.indd-1.pdf

https://blogs.loc.gov/law/2011/12/caramuel

Logic, is the art (or skill) of reasoning (or discoursing).
It directs the mind (or understanding) rightly
to manage (or make use of) reason in discourse.
The object of **logic**, (or that about which it is conversant),
is all things real or imaginary--whatever we can discourse of.
Discourse is either mental, that of the mind, whereby
we think of and compare things one with another and
infer one thing from another. Or vocal, whereby
we express in words those thoughts
or inward discourse of the mind.*

John Wallis

British, born Ashford, Kent,1616
Institutio Logicæ
Arithmetica Infinitorum (evolved into the calculus by Newton and Leibniz)
Algebra;   English Grammar
Introduced the symbol ∞ to represent the concept of infinity and used 1/∞ for an infinitesimal
Presbyterian minister, BA, MA Emmanuel College, Cambridge;   DD Oxford
Fellow of Queens' College, Cambridge
Highly sought after cryptologist for Parliament and the royal court during the Civil Wars
Prominent in establishing the Royal Society
A heated exchange with Thomas Hobbes on Squaring The Circle –Wallis the winner
Advances in musicology and maintaining church organs
Devised a system for teaching a deaf boy to speak
Savilian Professor of Geometry at Oxford University for 54 years
Eponym of the John Wallis Academy in Ashford, Kent—his birthplace

https://royalsocietypublishing.org/doi/epdf/10.1098/rsnr.2018.0047

https://3010tangents.wordpress.com/2015/04/05/john-wallis-a-man-before-his-time/

Sometimes we conclude by **logic** a manifest absurdity
from the negation of a hypothesis,
and then the hypothesis is true;
or instead we conclude by **logic** a manifest absurdity
from its affirmation, and then the hypothesis is established as false;
and when we have not been able to derive an absurdity,
from either its negation or its affirmation,
the hypothesis remains in doubt;
so that, to establish the truth of a hypothesis,
it is not enough that all the phenomena follow from it,
but if there follows by **logic** something contrary to
one of the phenomena, that is enough to establish its falsity.*

"If your aim is to ruin my reputation, by calumniating me
before persons of honour, and I cannot prevent it
by any other means than killing you, may I do so?"
Yes—observe the proof: If when you attempt
to take away my honour by giving me a blow,
I may prevent it by force of arms,
the same kind of defense is allowable when you aim
to do me the same injury with your tongue.
Moreover, we may prevent affronts—
therefore we may prevent slander .
Lastly, honour is dearer than life;
but it is lawful to kill another in defense of life;
therefore it is equally so to kill in defense of honour.
This is sound **logical** argument.
It is not talk and rant, but demonstration!**
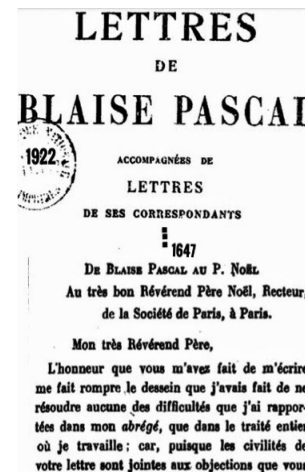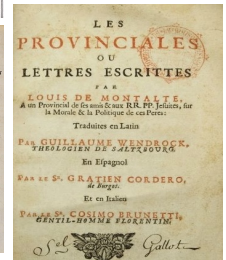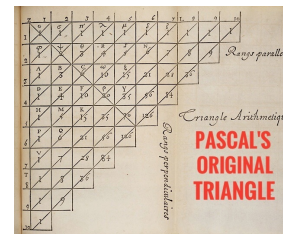
Blaise Pascal

French, born Clermont-Ferrand, 1623
*Reply to the Very Reverend Father Noël
**Provincial Letters VI (a satire under pseudonym; not Pascal's own assertions)
Pensées
Significant contributor to the *Port-Royal Logic* ([Antoine Arnauld](#))
A remarkable genius in science (including barometry [above]), religion, mathematics, and literary style
Produced new mathematical proofs before age thirteen
Put forward "Pascal's Wager": a logical argument for religious Faith
 "If you believe even though God does not exist, you lose nothing.
 But if you don't believe and God does exist, you lose everything. Thus you ought to believe in God."
Eponym for the array of binomial coefficients (above)
Studied with the leading scholars of the era, but never held a professorship
By royal decree, given a monopoly for his calculating machine – the **Pascaline** (above)
Devised new mechanisms for hydraulic engineering; a founder of the theory of probability
Lunar crater named for him
  http://www.thocp.net/biographies/pascal_blaise.html   FIND POSTAGE STAMP

RESIDENCE IN OTES MANOR, NEAR HARLOW

unknown

Amsterdam

Jacob von Ruisdael   1680

AN
ESSAY
CONCERNING
Humane Understanding.
In Four BOOKS.
Written by JOHN LOCKE, Gent.
The Fourth Edition, with large Additions.

What room is there for the exercise of any other faculty,
but outward sense and inward perception?
What need it there of reason [**logic**]?
Very much: for it is necessary and assisting
to all our other intellectual faculties.
It so orders the intermediate ideas as to discover
what connexion there is in each link of the chain,
whereby the extremes are held together;
and thereby, as it were, to draw into view the truth sought for,
which is that which we call illation or inference,
and consists in nothing but the perception
of the connexion there is between the ideas,
in each step of the deduction; whereby the mind comes to see,
either the certain agreement or disagreement of any two ideas,
as in demonstration, in which it arrives
at knowledge; or their probable connexion,
on which it gives or withholds its assent, as in opinion.
Sense and intuition reach but a very little way.
The greatest part of our knowledge
depends upon deductions and intermediate ideas:
and in those cases where we are
fain to substitute assent instead of knowledge,
and take propositions for true, without being certain they are so,
we have need to find out, examine,
and compare the grounds of their probability.
In both these cases, the faculty which finds out the means,
and rightly applies them,
to discover certainty in the one, and probability in the other,
is that which we call reason [**logic**].*
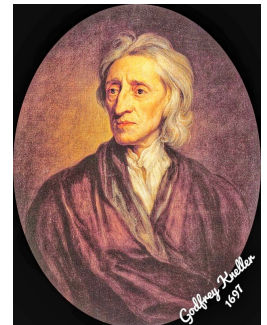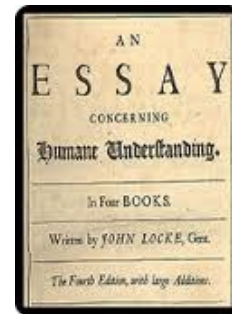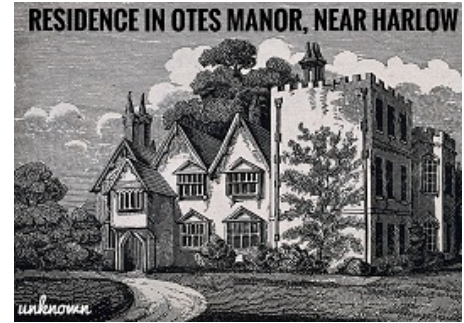
John Locke

English, born Wrington, Somerset, 1632
An Essay Concerning Humane Understanding   (compressed from Book IV, chapter xvii)
Questions Concerning the Law of Nature   (cf. folios 49-51)
Two Treatises of Government (fundamental sources for revolutions in America and France)
Philosopher, physician, and defender of free government
Likened the mind to a "tabula rasa" on which all experience is written
Argued and insisted that Life and Liberty are inherent human rights
Formulated the basis of the Spirit of Democracy
Stressed the importance of toleration.
At risk for advocating democracy and toleration chose self exile in Holland; on return a hero
Supervised life-saving liver surgery (long before anesthesia)

http://www.johnlocke.org/about/who_is_john_locke.html   FIND STAINED GLASS

Those who think to find
the true principles of physics
by **logic** alone,
fail to understand
that sound science
is founded on observation.*
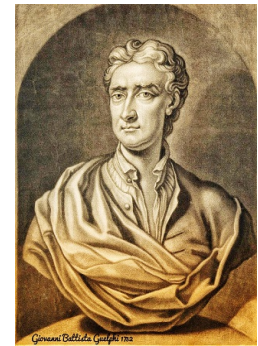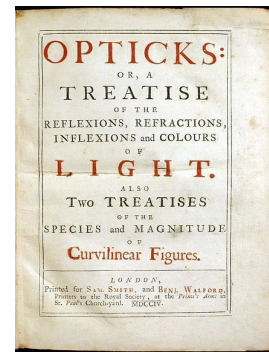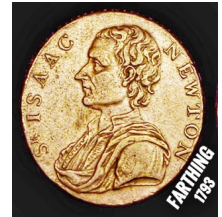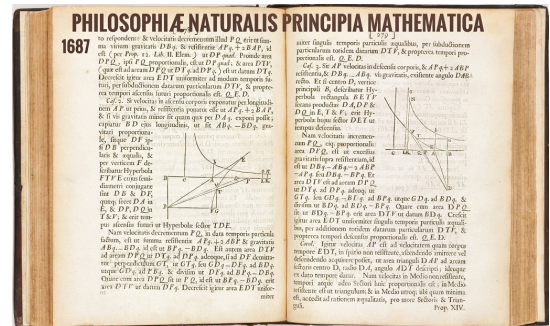
Isaac Newton

English, born Woolsthorpe-by-Colsterworth, Lincolnshire, 1643
Optics
Principia Mathematica (Latin [above], translated after his death)
By most accounts the greatest scientific genius ever
Established gravitation and the laws of motion
Derived therefrom all planetary phenomena
Developed nearly the complete science of optics
Invented the calculus (coincidental with [Gottfried Leibniz](#))
Discovered a new formula to calculate π
Oddly, wrote more works on alchemy than anything else
A bachelor and highly reclusive
Was certain that nature's intricacies prove God's existence
As head of the Royal Mint, gained convictions and gruesome executions for counterfeiters
Elected to Parliament, his only recorded words were about how drafty the chamber was
Died of mercury poison (from alchemy experiments), penniless
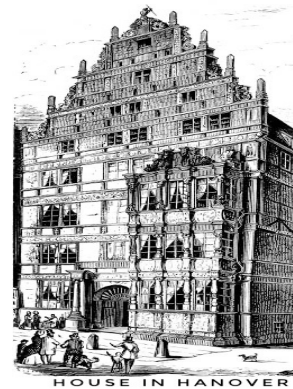Lunar and Martian craters named for him

http://galileoandeinstein.physics.virginia.edu/lectures/newton.html   FIND POSTAGE STAMP

Work room in Hanover

This art of **logic** concerns
all kinds of reasoning
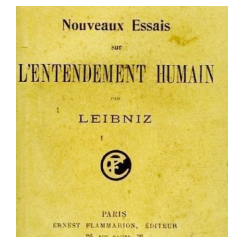in which inferences
are executed by their form.*

The basis of the syllogism is this:
if some whole, C, falls within some D
or if a whole, C, falls outside some D,
then in the first case
that which is in C will fall within D,
and in the second case it will fall outside D.
This is what is commonly called
the *dictum de omni et nullo*.**[§]

HOUSE IN HANOVER

Nouveaux Essais
sur
L'ENTENDEMENT HUMAIN
par
LEIBNIZ
I

PARIS
ERNEST FLAMMARION, ÉDITEUR

GÖTTINGEN

Gottfried Leibniz

German, born Leipzig, Saxony, 1646
New Essays on the Human Understanding
**Unpublished Pamphlets and Fragments*,   *Explanation of Binary Arithmetic,   Monadology*
Philosopher, mathematician, jurist, engineer, theologian, physicist, linguist, logician, diplomat, historian
Denied doctorate degree by Univertsity of Leipzig because of his youth
Never held a university position
Espoused the Principle of Sufficient Reason–that nothing occurs without a logical explanation
Argued that a divine plan made this the best of all possible worlds
Derived syllogistic and proposition logic from algebraic calculi
Invented calculus (coincidental with Isaac Newton)
Formulated the binary number system, later elaborated and refined by George Boole
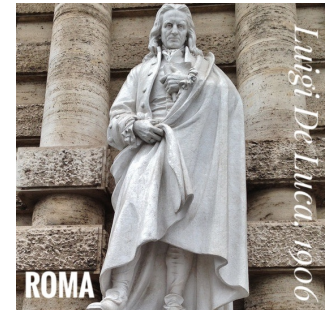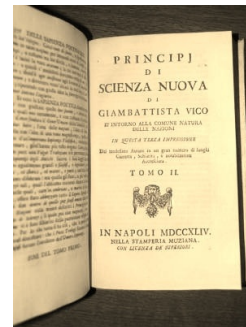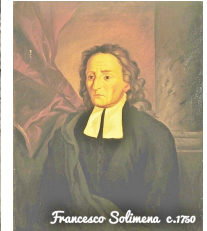Designed one of the earliest calculators–the Step Reckoner (above)
Loved gambling, but later argued that knowledge cannot be based on probability
Set forth the basis of library science; lunar crater named for him

[§] Underlying canon in Aristotelian logic

FIND POSTAGE STAMP

NAPOLI 1701

NAPLES NATURAL HISTORY MUSEUM

Ferrante Imperato 1599

Francesco Solimena c.1750

The human mind needs **logic**
in order to form
clear and distinct ideas,
but concrete examples
precede the use of **logic**.*

LARGO DI PALAZZO, NAPLES

Caspar van Wittel 1706

Francesco Jerace c.1900

PRINCIPJ
DI
SCIENZA NUOVA
DI
GIAMBATTISTA VICO

TOMO II

IN NAPOLI MDCCXLIV.

ROMA

Luigi De Luca 1906

Giambattista Vico

Italian, born Naples, 1688
The New Science
The Academies and the Relation between Philosophy and Eloquence
On Humanistic Education, Autobiography
A truly revolutionary mind, far ahead of his time
Professor of Rhetoric, University of Naples
Stressed that logic can achieve nothing except within a human context
Argued that we can know only what we have made or are in the process of making
   Such as: Language, Myth, Industry, Tradition, Government, Art, etc. In a word – HISTORY
Thus held that God is totally unknowable, since man did not make God
His work virtually forgotten for 100 years

http://www.historyguide.org/intellect/new_science.html   FIND POSTAGE STAMP

Logic is the art which directs the mind
in its acquisition of knowledge of things,
and may also be called the science or the art
of investigating and expressing truth.
The material object of any skill or science
is the material which it treats.
The formal object
is the reason or purpose of treating it.
The material object of **logic**
is the intellectual operations.
The formal object
is to be directed to the discovery of truth.*

Francis Hutcheson
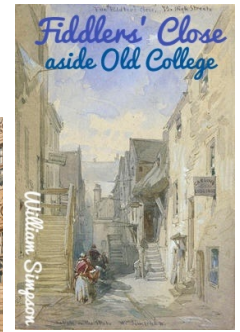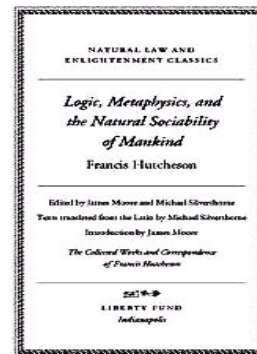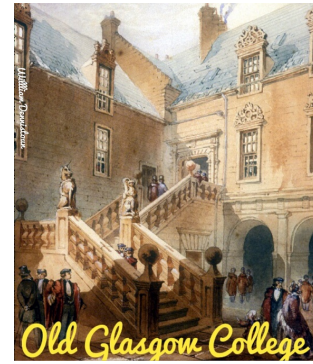
Scottish, born Drumalig, Saint Field, County Down, 1694
Logic, Metaphysics, and the Natural Sociability of Mankind
Enquiry into the Original of Our Ideas of Beauty and Virtue
Essay on the Nature and Conduct of the Passions and Affections
Reflections upon Laughter, A System of Moral Philosophy
The Meditations of the Emperor Marcus Aurelius (translator)
Presbyterian minister and a significant figure in the Age of Enlightenment
Proponent of liberty and freedom of ideas
Professor of Moral Philosophy at The University of Glasgow
Highly influential mentor of the great economist Adam Smith
Fervently preached that benevolent feelings form part of human nature
Argued that the test of virtuous action is that it aids the general welfare
Such ideas dismissed by the Presbytery as contrary to its two basic tenets:
  (i) that the standard of moral goodness is God's word and commands
 (ii) that man cannot know good from evil apart from knowledge of God
A highly regarded and influential moral philosopher in colonial America
Stood for unalienable rights and collective right to resist tyranny

http://oll.libertyfund.org/?option=com_staticxt&staticfile=show.php%3Ftitle=1723&Itemid=27

The **logic** calculus which I present here
makes use only of the signs of identity and diversity,
nevertheless it is prolific in inventing and proving
the syllogisms and their combinations very easily,
without admitting any errors,
rather it detects their origins.
It also does so without requiring
that the syllogistic figures and moods be known;
instead all valid syllogisms are invented and proven
by one and the same direct operation.*
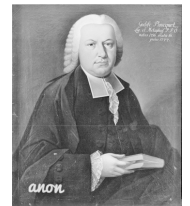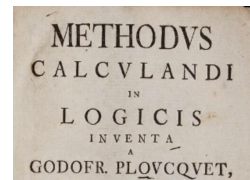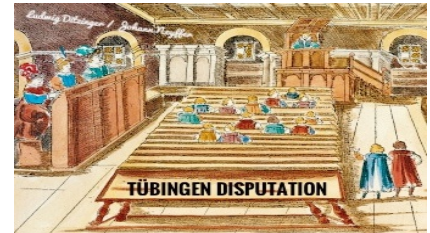
Gottfried Ploucquet

German, born Stuttgart, 1716
* *Method of Calculation in Logic*
Investigation and Modification ....
Theoretical Explanations in Philosophy
Elements of the Science of Thinking
Fundamentals of Speculative Philosophy
Raised in the Pietist movement and served as a pastor
Inspired by René Descartes
Professor of logic and metaphysics at Tübingen University
Introduced quantifying the predicate in syllogistic logic
Advanced the logic of relations and adumbrated symbolic logic and set theory
Attacked the materialist doctrines of the time
Strove to reshape all philosophy (including logic) based on ontology and theology
Late in life also appointed professor at the Stuttgart Military School
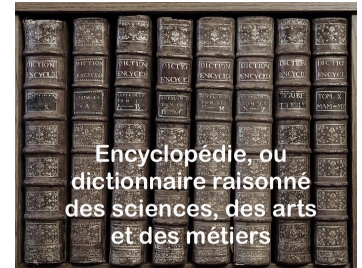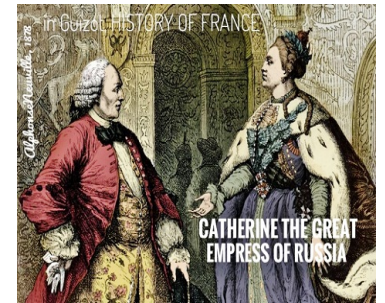Final twenty years in total seclusion, yet still highly productive
Before death his library and manuscripts lost by fire

https://www.biblicalcyclopedia.com/P/ploucquet-gottfried.html

https://www.britannica.com/biography/Gottfried-Ploucquet

Paris 1760
Pierre F. Courtois

in Guizot HISTORY OF FRANCE

CATHERINE THE GREAT
EMPRESS OF RUSSIA

Encyclopédie, ou
dictionnaire raisonné
des sciences, des arts
et des métiers

Jean Simon Berthélemy

Logic teaches how to arrange ideas
in the most natural order, how to link them together
in the most direct sequence, how to break up those
which include too large a number of simple ideas,
how to view ideas in all their facets,
and finally how to present them to others
in a form that makes them easy to grasp.
This is what constitutes this science of reasoning,
which is rightly considered the key to all our knowledge.
However, it should not be thought
that the formal discipline of **logic**
belongs among the first in the order of discovery.
The art of reasoning is a gift which Nature bestows
of her own accord upon men of intelligence,
and it can be said that the books which treat this subject
are hardly useful except to those
who can get along without them.
People reasoned validly long before
logic, reduced to principle,
taught how to recognize false reasoning,
and sometimes even how to cloak it
in a subtle and deceiving form.*

Denis Diderot

French, born Langres, Champagne, 1713
Preliminary Discourse to The Encyclopedia
     A magnum opus in all Western thought
     Editor-in-chief with many contributors
     Quotation likely by prime collaborator Jean d'Alembert---------->
Rameau's Nephew; On the Interpretation of Nature
The Nun   (a stinging indictment of religion's vice-like grip on mankind)
A leading force in the struggle for freedom of thought
An open atheist, materialist, and hostile to religious authority
Argued that only the virtuous can know true happiness
Held that only by using reason can mankind find truth and achieve progress
Lunar crater named for him

Catherine Lusurier 1777

http://people.brandeis.edu/~teuber/diderotbio.html

I suppose that if one had given only six months
to teaching Pilate the truths of **logic**,
he would assuredly have made
this conclusive syllogism:
....
One must not take away the life of a man
who has only preached good morality:
Well, the man who has been impeached has,
on the showing of his enemies even,
often preached excellent morality;
therefore he should not be punished with death.*
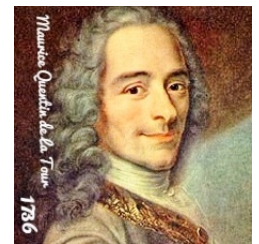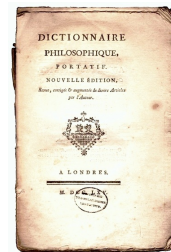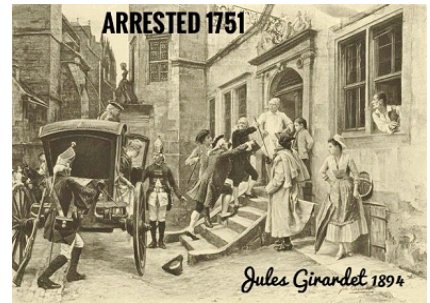
Francois-Marie Arouet – "Voltaire"

French, born Paris, 1694
Philosophical Dictionary–"Truth"
        Printed anonymously in London and secreted back to France
The Elements of Sir Isaac Newton's Philosophy
Zidig   Chapter 3,"The Dog and the Horse", founding epitome for abductive logic, highly recommended
Candid, Mérope, Olympia, Alzire, Orestes, Oedipus, Zaire, Philosophical letters
The Age of Louis XIV, The Philosophy of History
The English Essays, A Treatise on Tolerance
Plus 20,000 letters and 2,000 pamphlets
Poet, novelist, playwright, historian, scientist and philosopher
One of the greatest figures in the advance of freedom in modern civilization
A master satirist against the "ancien régime," intolerance, and restraint of ideas
Imprisoned for revolutionary publications and often fled Paris to escape censure
Close friendship with Benjamin Franklin

http://www.thegreatdebate.org.uk/Voltaire.html   FIND POSTAGE STAMP
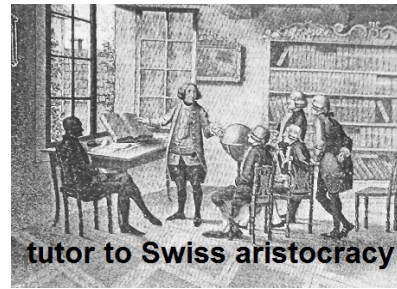
Logical truths are immutable
and can be derived a priori.
By contrast, physical truths are a posteriori,
because we must take the world as it is,
and because the Divine mind sees deeper
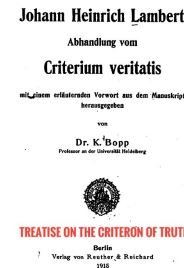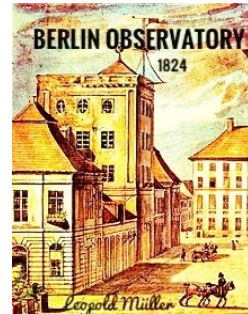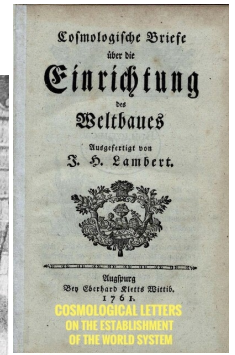than it is possible for us.
Only through research can we find them a priori.*

Our knowledge of the forms of **logic**
is incontestable.

Letter to Immanuel Kant.

tutor to Swiss aristocracy

COSMOLOGICAL LETTERS ON THE ESTABLISHMENT OF THE WORLD SYSTEM

BERLIN OBSERVATORY 1824

LAMBERT MONUMENT MULHOUSE, FRANCE

Johann Heinrich Lambert
Abhandlung vom
Criterium veritatis

TREATISE ON THE CRITERON OF TRUTH

Johann Lambert

Swiss, born Mulhouse, 1728
Treatise on the Criterion of Truth
New Hypothesis of the Universe, Pyrometric, Photometric
Cosmological Letters on the Arrangement of the World Structure
The Distinction between Error and Appearance
Primary Elements in Philosophical and Mathematical Knowledge
Virtually totally self-taught
From age 20 to 48 produced important work while tutoring and serving Swiss aristocrats
Provided the first proof that π is not a rational number
Leading astronomer at the Prussian Academy of Sciences
Invented an accurate way of measuring the intensity of light
Theorized that there are other galaxies beyond our own
Struggled throughout life to find academic employment
Published 150 articles and books
Never married and had no children
Died at age 49 from tuberculosis
Lunar and Martian craters named for him

http://spider.seds.org/spider/Misc/lambert.html

The operations of the mind are three:
Simple Apprehension, Judgment, and Discourse.
But our Apprehensions apt to be indistinct,
our Judgment false, our Discourse inconclusive.
To prevent this, wise men prescribed several rules
which were at length collected into one body
and termed **logic** or The Art of Reasoning.
But we cannot express to another
what passes in our own mind any otherwise than by words.
It is therefore by teaching us the proper use of words
that **logic** assists the mind to apprehend distinctly,
to judge truly, and to discourse conclusively.*
...
Dear brother: I had rather dispute, if I must dispute,
with you than with any man living
because it may be done
with so little expense of time and words.
The question is now brought to one point,
and the whole of the argument will be in one syllogism:
Neither hope of doing greater good nor fear of any evil
ought to deter you from what you have engaged yourself .
But you have engaged yourself
to undertake the cure of a parish:
So neither that hope nor that fear ought to deter you in it.**
...
It is a wonder that anyone has patience to learn **logic,**
but those who do it on a principle of conscience;
unless he learns it as three in four
of the young gentlemen in the Universities do:
That is, goes about it and about it,
without understanding one word of the matter.***
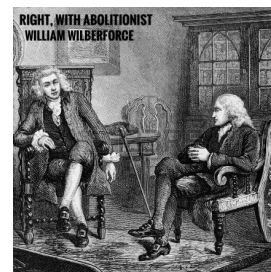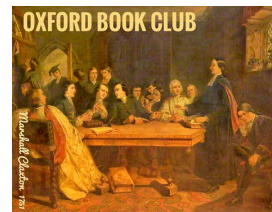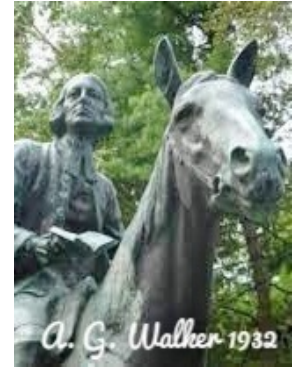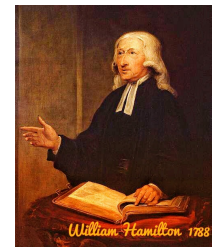
John Wesley

British, born Epworth, Lincolnshire, 1703
A Compendium of Logic (his translation of Henry Aldrich's long-standing *Artis Logicae Compendium*)
**Letter to his brother Samuel in 1725
***Journal 1746-1749*
Fellow of Lincoln College, Oxford
Anglican priest, founder of Methodism; tireless and captivating preacher, orator, and evangelist
Instrumental in the growth of piety in colonial America, even preaching to native American indians
Facing charges of ministerial misconduct in the Georgia colony, fled back to England
Held that the study of logic is next in importance to the study of the Bible!
Several sermons resemble lectures on logic.

https://literariness.org/2019/04/22/the-philosophy-of-george-berkeley/

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Logic prescribes rules for valid reasoning
the observance of which will secure us from error......
We frequently employ compound propositions which contain more
than two notions and respecting which, rules are to be observed
in order to deduce fair conclusions from them.
Of this conditional proposition:
If A is B, C will be D.
The first part <u>A is B</u> is called the antecedent,
and the other <u>C will be D</u> the consequent.
Logic prescribes the two following rules
to direct us in this style of reasoning:
(I) Whoever admits the antecedent
must likewise admit the consequent.
(II) Whoever denies or rejects the consequent
must likewise deny or reject the antecedent.
But you may very well deny the antecedent
without denying the consequent
and likewise admit the consequent
without admitting the antecedent....
The following is an example of a conditional proposition:
"If the gazette speaks truth, peace is not very distant."
There are two ways of drawing a conclusion from it.
1st When some person assures us that the gazette speaks truth,
for hence we conclude that peace is near.
2nd When we are told that peace is still very distant,
then we make no hesitation in thence concluding
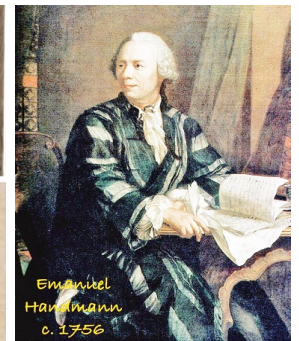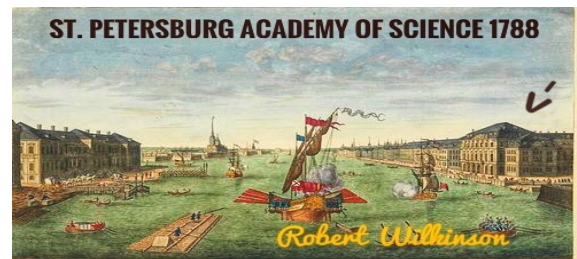that the gazette does not speak truth.
....
Logic is the foundation of the certainty
of all the knowledge we acquire....
But it is entirely unnecessary
to detain you any longer on this subject.*
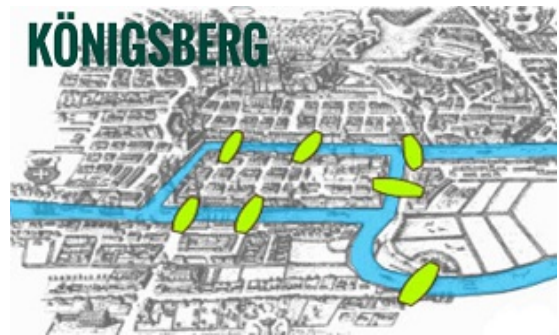
go to BRIDGES

Leonhard Euler

Swiss, born Basel, 1707
Letters to a German Princess   (the international standard in home learning for 150 years)
Foundations of Differential Calculus, Introduction to Analysis of the Infinite
Distinguished Professor in Basel, St. Petersburg, and Berlin
"Euler Circles" — the first general diagram method for testing validity in logic
Founded graph theory and presaged topology via The Bridges of Königsberg (see above with link)
Established several standard symbols in mathematics, e.g. Σ, e, π
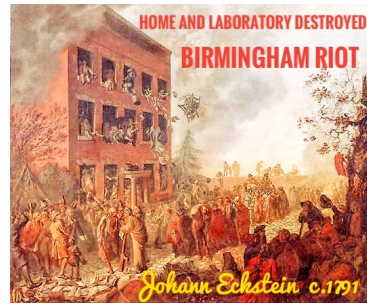Wrote 900 works, half of them while totally blind in the last 20 years of his life
Important advances in astronomy, mechanics, optics, acoustics, theoretical aerodynamics
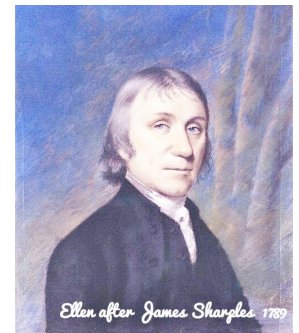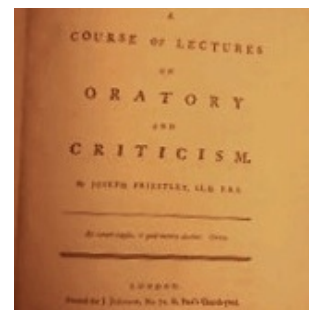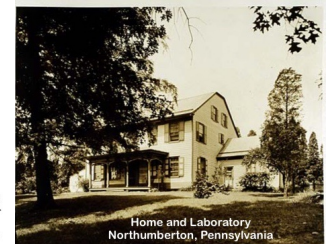Recited Virgil's Aeneid verbatim without hesitation.; lunar crater and mountain in his name

http://www.math.dartmouth.edu/~euler/   FIND POSTAGE STAMP

It is necessary, likewise,
as far as reasoning is concerned,
that a person be, in some sense, a logician
before he be an orator;
since it is by the rules of **logic** that we judge
of every thing relating to arguments,
their perspicuity or confusion,
their fallacy or their force.
But notwithstanding this be treated of
in many books written on the subject of oratory,
and particularly by Aristotle,
those plain principles of **logic**
are obvious to common reflection,
and must have occurred to every person
before he hath lived to the age
in which he has any occasion for the art of oratory.*

oxygen
apparatus

Home and Laboratory
Northumberton, Pennsylvania

Joseph Priestley

British, born Birstall, Yorkshire, 1733
*A Course of Lectures on Oratory and Criticism
Essay on a Course of Liberal Education for Civil and Active Life
The History and Present State of Electricity, Essay on the First Principles of Government
      Originator of the motto of Utilitarianism **"The greatest happiness of the greatest number"**
Institutes of Natural and Revealed Religion, The Doctrine of Philosophical Necessity Illustrated
Disquisitions relating to Matter and Spirit;   A History of the Corruptions of Christianity
A truly remarkable figure in the progress of mankind in the modern world
Theologian, Dissenting clergyman, scientist, educator, political theorist, and social reformer
Seminal experiments and observations on oxygen, photosynthesis, optics, carbon monoxide, rubber,... more
Insisted on freedom of speech, ideas, and religion; supported the French revolution and American independence
Prime target of the Birmingham anti-Dissenters riot, home and laboratory burned; hounded in other cities
Emigrated to the United States after independence, home in Pennsylvania, never returning to England
Preached/ lectured widely in America; warmly received by John Adams and Benjamin Franklin
From letter to him by President Thomas Jefferson: **"Yours is one of the few lives precious to mankind"**
A profound influence on the Jefferson Bible
Founded Unitarian Church in England and its leading proponent in America
Held that learning the truths of science will lead to a "Golden Age" of peace, harmony, stability, and prosperity
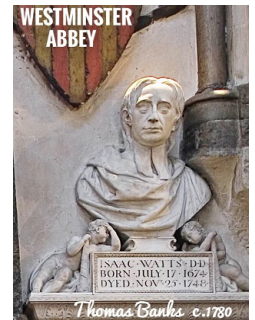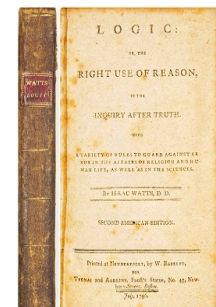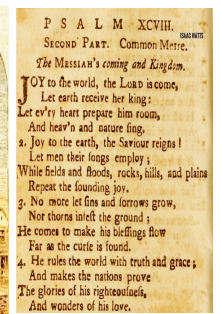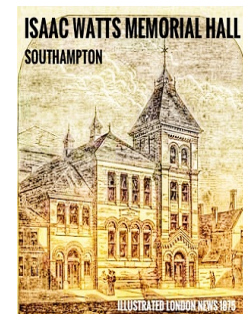Fluent in seven languages; authored over 500 books and pamphlets
Perhaps his most enduring and treasured legacy— soda pop
Lunar and Martian craters named for him

http://www.uuworld.org/ideas/articles/145518.shtml   FIND POSTAGE STAMP
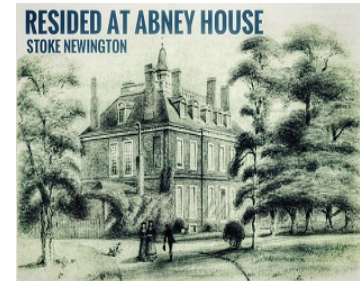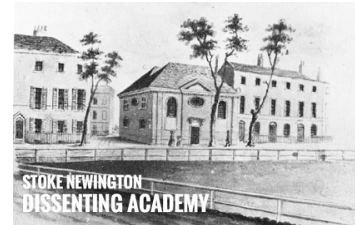
It was a saying among the ancients,
Veritas in puteo. "Truth lies in a well;"
and to carry on this metaphor, we may very justly say
that **logic** does, as it were, supply us with steps
whereby we may go down to reach the water;
or it frames the links of a chain,
whereby we may draw the water up from the bottom....
There are a thousand things which are not in reality what they
appear to be,...and **logic** helps us to
strip off the outward disguise of things, and to behold them,
and judge of them in their own nature....
So that one great part of the design of **logic**
is to guard us against the delusive influences
of our meaner powers, to cure the mistakes of immature judgment,
and to raise us in some measure from the ruins of our fall....
[Yet] I confess, much ingenuity has discovered
the precise number of syllogisms
that may be formed in every figure, and giving the reasons of them;
yet the light of nature, a good judgment,
and due consideration of things,end more to true reasoning
than all the trappings of moods and figures.**

Isaac Watts

British, born Southampton, 1674
Logic: The Right Use of Reason in the Enquiry after Truth (text at Oxford, Cambridge, Yale, Harvard)
        "far superior to the treatises now used in colleges,
        being the production of a man distinguished for good sense" [Charles Sanders Peirce](#)
The Art of Reading and Writing English; Sermons and Religious Tracts (in ten volumes),
Only formal education at the Stoke Newington Dissenting Academy (above)
A "Dissenter" minister in non-conformity with the authoritative Anglican Church
Urged logic as the means of telling good from evil
By age 13, had learned Latin, Greek, Hebrew, and French
Best known both then and now for 700+ widely used hymns, e.g. JOY TO THE WORLD (above)

https://hymnary.org/hymn/PHW/III.38   (last sentence an oblique reference to logic)
                            https://archive.org/details/logicorrightuseo00watt

But least of all can we advance,
that the study and practice of **logic** are unnecessary.
For when a man has not a distinct knowledge
of the Rules by which the understanding is directed,
he may err in the use of his natural powers;
as we have instances of those illogical reasonings,
by which learned men are sometimes led into error.
....
The artificial **logic** [syllogistic reasoning]
differs not from the natural [God given power],
but rather is a distinct explanation thereof.*
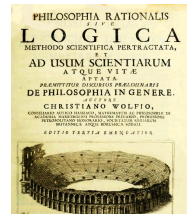
Christian Wolff

German, born Breslau, Silesia, 1679
* *Logic, or Rational Thoughts on the Powers of the Human Understanding*
Preliminary Discourse on Philosophy in General, Ontology
Prolegomena to Empirical and Rational Psychology
German Logic, Latin Logic, Metaphysics, Ethics, Cosmology
Prior to Immanuel Kant, the leading German philosopher in the Age of Enlightenment
Held that the science of logic simply describes how the mind works
Argued that for something to exist there must be a "Sufficient Reason"
Insisted that even possibilities must conform to the basic principle of logic
Unorthodox and liberal lectures and writings angered church authorities
So after 20 years, dismissed from Halle University; then even more famed at Marburg University
Gained wide acceptance and notoriety throughout Europe
Died very wealthy from lectures, professorships, and publications
Lunar mountain named for him

http://www.nndb.com/people/265/000103953/

Logic or the art of arranging and connecting ideas,
of forming and examining arguments,
is universally allowed to be an attainment
in the utmost degree worthy the ambition
of that being, whose highest honour it is
to be endowed with reason.....
And therefore it will be proper
when **logic** has been once learned,
the teacher take frequent occasion,
in the most easy and familiar conversation,
to observe when its rules are preserved,
and when they are broken,
and that afterwards he read no authors,
without exacting of his pupil an account
of every remarkable exemplification
or breach of the laws of reasoning......
And when this system has been digested,
if it be thought necessary to proceed farther in
the study of method, it will be proper
to recommend Wolff, Locke,
and, if further necessary, Aristotle.*
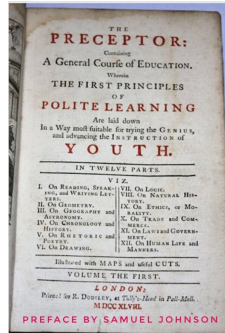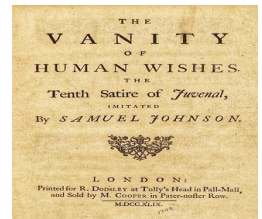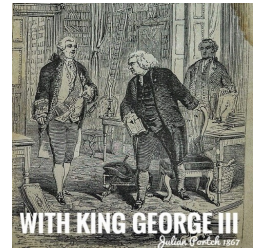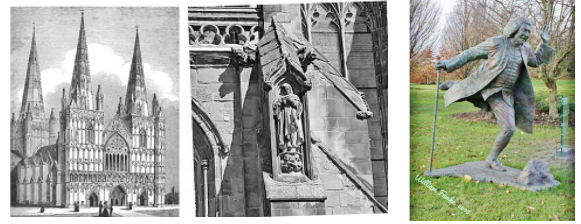
Samuel Johnson

British, born Lichfield, Staffordshire, 1709
*preface to *The Preceptor* ("A Course of Education for Polite Learning")
Dictionary of the English Language (a singularly prodigious achievement, see above)
Rasselas, the Prince of Abyssinia;   Lives of the Poets;   A Journey to the Western Highlands of Scotland
"The Vanity of Human Wishes" (above, required reading!)
Scores of articles in literary magazines
Only one year at Pembroke College, Oxford, for lack of funds; later, several honorary degrees
James Boswell's *The Life of Samuel Johnson* a perpetual favorite and "must read"
Unmatchable in debate, fervently sociable, happily married, and attentive to Hodge ----------->>
Ardently Anglican, but mainly moralistic, less theological
Among his many aphorisms:
  You raise your voice when you should reinforce your argument.
  I have found you an argument: but I am not obliged to find you an understanding.
Buried in Poets' Corner, Westminster Abbey

https://www.neh.gov/humanities/2009/septemberoctober/feature/what-samuel-johnson-really-did

http://www.samueljohnsonbirthplace.org.uk   FIND STAINED GLASS

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Refutation is the proof that others err.
No one refutes unless he proves thereby
another's fallacy. But if you want to prove
such things, it is clear you have to study **logic**.
When you refute, you are sure to get it wrong,
if you are no logician.*

....
The Greek philosophers and the Church fathers
have already carefully distinguished
between things perceived and things known.
It is entirely evident that they did not equate things known
with things of sense, since they honored with this name
things also removed from sense (therefore, images).
Thus, things known are to be known by the superior faculty
as the object of **logic**; things perceived are recognized
by the inferior faculty, as the object of aesthetic.
The philosopher presents his thought as he thinks it.
Hence there are no special rules, or only a few§
that he must observe in presenting it.
He has no special interest in terms,
so far as they are articulate sounds,
for as such they belong among the things perceived.
But he who presents sensate subject matter
is expected to take much greater account of terms.
Hence that part of aesthetics which treats of such presentation
is more extensive than the corresponding part of **logic**.**

§ presumably such as Omni et Nullo, Contradiction
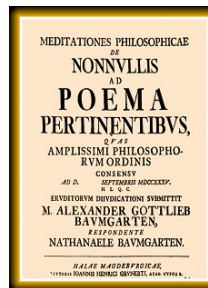
Alexander Gottlieb Baumgarten
(no known representation)

German, born Berlin, 1714
Philosophical Meditation (a poem within the book)
**Reflections on Poetry*
Aesthetics, Metaphysics, Ethics, Natural Law, Lectures in Theology and Logic
Most notable in Philosophy of Beauty and coined the word "aesthetics"
Established aesthetics as a distinct field of philosophical inquiry
Strove to extract the principles of beauty from individual taste
Raised at the famous Pietist Francke Foundation Orphanage, learned Yiddish and Hebrew
Studied and lectured at the closely associated Halle-Wittenberg University
Highly regarded and influential professor at Frankfurt an der Oder
A devotee of Latin poetry
Married twice and died of tuberculosis at age 48
Immanuel Kant's appraisal: **"a man quite rich in material and quite succinct in its execution"**

http://frieze.com/article/beautiful-science

Logic is not so much to teach Men
the Art of true Reasoning,
as to enable them to bring false Arguments
to a proper Trial and Scrutiny.
....
Logic is the Way
of arriving at Demonstrations
by the conclusive Form–
the Rule of Syllogism.
In the composition of Syllogisms
there must be nothing vicious in the Form,
the Rules laid down concerning them
having been allowed by the Learned
to be just and solid and agreeable
to the natural Course of Reason.*
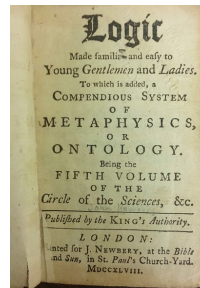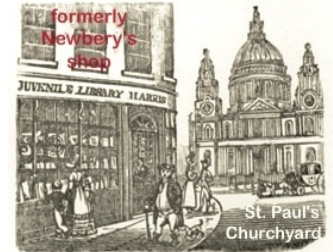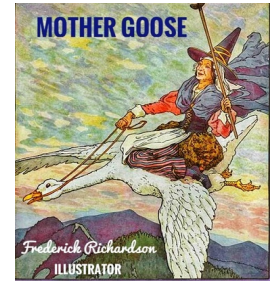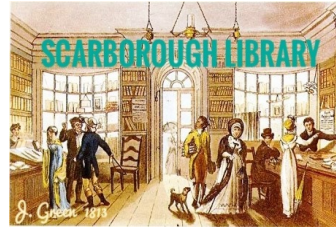
John Newbery

British, born Waltham St Lawrence, Berkshire, 1713
*Logic Made Familiar and Easy for Young Gentlemen and Ladies
           Editor, publisher, and very likely contributing author
The Newtonian System of Philosophy
Mother Goose's Melody ;   A Little Pretty Pocket-Book
The Renowned History of Giles Gingerbread   The History of Little Goody Two-Shoes
Largely self-taught, yet highly knowledgeable in literature, science, religion, government, etc.
Highly successful publisher and bookseller
Remembered almost solely for his children's books with illustrations–the first ever
Eponym for the highly prized yearly Newbery Medal for children's literature
Collaborated with Samuel Johnson and Oliver Goldsmith
A sign on his storefront:
   **"On the first of January, being New Year's Day, Mr. Newbery intends to publish the following important volumes, bound and gilt,
   and hereby invites all his little friends who are good to call for them at the Bible and Sun in St. Paul's Churchyard,
   but those who are naughty to have none."**

http://18thcbritishchildrensliterature.weebly.com/john-newbery.html

http://books.google.com/books?hl=en&lr=&id=yzQQAAAAIAAJ&oi=fnd&pg=PA1&dq=newbery,%22Logic+made+familiar%22&ots=bid
WWpZgYc&sig=l9St9x4Vs9Gca9Hcd4wUNItP0rM

Cloyne, Ireland

Edward Gennys Fanshawe

The truth of the conclusion will not prove
either the form nor the matter
of a syllogism to be true:
in as much as the Illation [inference]
might have been wrong or the premises false,
and the conclusion nevertheless true,
though not in virtue of such illation
or of such premises.
I have no controversy about your conclusions,
but only about your **logic** and method.*

Surely it wouldn't be
such a deplorable loss of time
if a young gentleman spent a few months
on the much despised and decried art of **logic**,
as a surplus of **logic** is by no means
the prevailing nuisance of this age.**
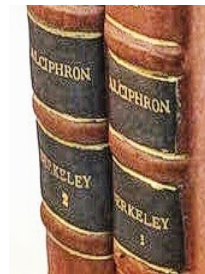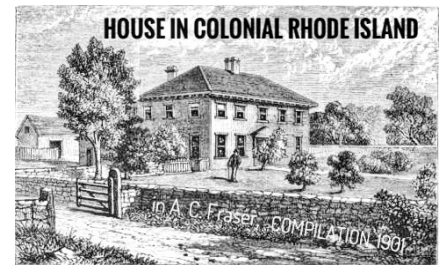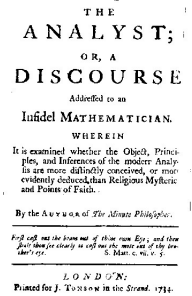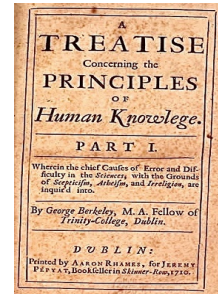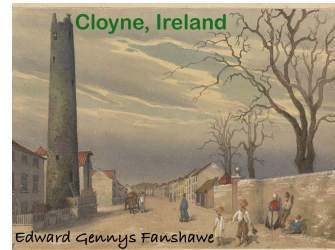
George Berkeley

British, born Thomastown, County Kilkenny, Ireland, 1685
The Analyst
**Alciphron or the Minute Philosopher*   (written in the Rhode Island colony)
 An Essay Towards a New Theory of Vision
Treatise Concerning the Principles of Human Knowledge
Three Dialogues between Hylas and Philonous,
Prominent Anglican Bishop in Ireland
A major figure in the Empiricism movement
Famous for dictum: "**To be is to be perceived.**"
Dean of Derry and Bishop of Cloyne, Four years in colonial Rhode Island
Gave his church stipend and bequeathed his library to Yale University
Strove (unsuccessfully) to establish a college in Bermuda

https://literariness.org/2019/04/22/the-philosophy-of-george-berkeley/

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The sole end of **logic** is to explain
the principles and operations of our reasoning faculty.
....
That is a contradiction in terms;
and even implies the flattest of all contradictions,
viz. that 'tis possible for the same thing
both to be and not to be.*§

Our ideas reach no farther than our experience.
We have no experience of divine attributes and operations.
I need not conclude my syllogism.**
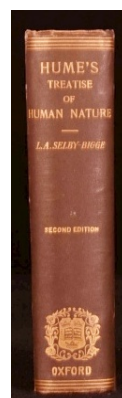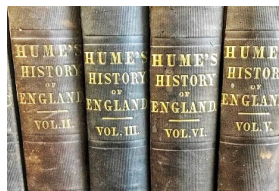
David Hume

British, born Edinburgh, Scotland, 1711
* *A Treatise of Human Nature* (**"fell stillborn from the press"**)
** *Dialogues Concerning Natural Religion*
 An Enquiry Concerning Human Understanding, Political Discourses
The History of England (critically acclaimed and made Hume jolly wealthy)
Doyen of Empiricism in modern philosophy
  I. e., that knowledge, error, belief, disbelief, even simple ideas are *a posteriori*
  Any matter concerning morality or religion is based solely in one's senses and perceptions.
Was sometimes a private tutor, secretary, and librarian
Most prominent figure in the Scottish Enlightenment
Led a largely private life of study, reading, and writing
Regular at taverns in Scotland, England, and France
With economist Adam Smith, founder of the Edinburgh Select Society Club
Frequenter of London pugs and taverns (above)
Never held an academic position
Shrouded his personal views, since atheists and radicals were subject to trial, even codemnation
Said to show ribald drawings to friends
Lunar crater named for him

§ Curious intimation of a reality apart from perception and desire

http://www.scottishphilosophy.org/philosophers/david-hume/

If we consider the analytical methods
to which this theory of probabilities
has given birth
and the truth of the principles
which serve as a basis and
the fine and delicate **logic** which their employment
in the solution of problems requires,
then we shall see that there is no science
more worthy of our meditations,
and that no more useful one could be incorporated
in the system of public instruction.*
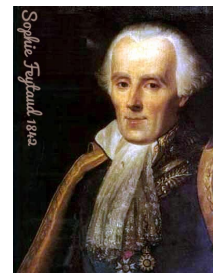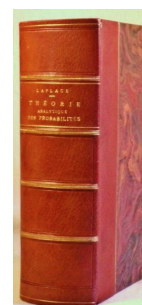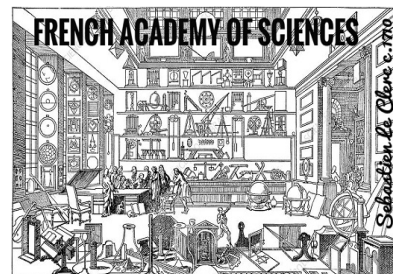
Pierre-Simon Laplace

French, born Beaumont-en-Auge, Normandy, 1749
*A Philosophical Essay on Probabilities, The World System, Celestial Mechanics
Analytic Theory of Probabilities* (dedicated to Napoleon Bonaparte)
Lecturer at l'Ecole Normale; prominent at the French Academy of Sciences (above)
Expanded the concept of logic to include probability
Narrowly escaped the guillotine in the Reign of Terror
Produced astounding advances in mathematics, physics, and astronomy
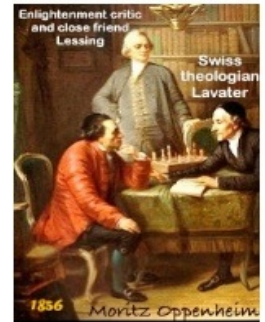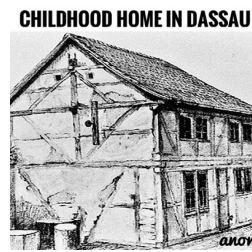Still renowned as "the Newton of France"
Minister of the Interior (for one month) under Napoleon Bonaparte (above)
His brain removed and on public exhibition, even put on tour!

http://books.google.com/books?id=WxoPAAAAIAAJ&pg=PR1&dq=inauthor:laplace&hl=en&ei=7oraTNKWHNiRnAfF6OT
5Ag&sa=X&oi=book_result&ct=result&resnum=4&ved=0CDYQ6AEwAzgU#v=onepage&q&f=false

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How much more merit
do the principles of **logic** have for the other sciences,
inasmuch as they do not rest
on judgments of the understanding and mere probability,
but are secured by evident and strict proofs.
Nor do the rules of **logic** contain anything
that leads into error, away from God's way;
for they are all too distant from the principles of religion
and from the foundations of the Torah
and have nothing to do
with commandment and prohibition.
All inhabitants of the earth, be they ever so different
in morals, opinions, and religions,
consent to the doctrines of the logicians.
Still, the purpose of this science is not
the distinguishing of truth and illusion
or of good and evil itself,
but the communication of the way
by which we arrive at the distinguishing of
truth from illusion and good from evil.*

CHILDHOOD HOME IN DASSAU — anon.

BERLIN SYNAGOGUE PURIM CELEBRATION — Augustin Calmet 1720

ADMIRED BY FREDERICK THE GREAT — POTSDAM 1771

Enlightenment critic and close friend Lessing — Swiss theologian Lavater — 1856 Moritz Oppenheim

BERLIN 1750 FISH MARKET

Morgenstunden [Morning Hours]

Fromet geb.Gugenheim

Moses Mendelssohn

German, born Dessau, 1729
Commentary on Moses Maimonides "Logical Terms" (intended for Jewish teachers, but with wider import)
Jerusalem; Phädon; Morning Hours, "On the Main Principles of the Fine Arts and Sciences"
"On Sentiments"; "On Evidence in Metaphysical Sciences"; "Rhapsody"
Near equal in the Enlightenment to [Diderot](#), [Johnson](#), [Hume](#), [Montesquieu](#), and [Voltaire](#)
Self-educated in philosophy, religion, aesthetics, and government
Vigorously maintained Jewish identity despite urgings to convert
Highly regarded in Christian cultural and literary society and amongst Royals
Elegant German Torah translation
Friend and co-author with literary/cultural doyen Gotthold Ephraim Lessing
Ten children, grandfather of famed Romantic composer, pianist, conductor Felix Mendelssohn
Retained a high position in the silk trade

https://persistentenlightenment.wordpress.com/2014/03/18/moses-mendelssohn-on-enlightening-the-mind/

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It was natural that men should make up for the weakness of their arms
by other means which nature had placed within their reach;
and thus it is that they became mechanicians before they studied mechanics.
It is thus they were **logicians** and thought, before they investigated how man thinks.
Centuries must have passed away before men could have suspected
that thought can be subjected to laws; and even at this time
the greatest number of mankind think without conceiving how it is done. ...
However, a happy instinct which has been called talent that is only
a more certain and sensible manner of perception,
guided some strong minds without their suspecting it.
The writings of such persons became models,
and in those writings people endeavored to discover, by what artifice,
unknown even to themselves, writers produced pleasure and intelligence.
The more they astonished those who read, the more it was imagined
they possessed some extraordinary means;
and people sought to discover those extraordinary means,
while they ought to have sought simple means only. ...
Thus here we shall not begin this **logic** by definitions, axioms, or principles;
we shall begin by observing the lessons which nature gives us.
In the first part, we shall perceive that what we call analysis
is a method which we learned from nature herself;
and we shall, after this method, explain the origin and generation
either of ideas or of the faculties of the mind
In the second, we shall consider analysis in its means and effects;
and the art of reasoning will then be reduced to a well constructed language.
This **logic** resembles none of those which have been composed hitherto
but the new manner in which it is treated shall not be its only advantage;
it must still be the simplest, easiest, and most luminous. ...
Reflect upon the method, and reflect frequently up on it;
but no longer think of it when you want to think of any other thing.
Some day it will become familiar to you: then it will be always with you,
it will observe your thoughts, which will go alone; and it will watch over them
in order to keep them from rambling. It is all you ought to expect from the method.
Fences are not placed along the sides of precipices to make the traveler march,
but to prevent him from tumbling down.*
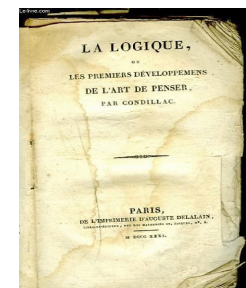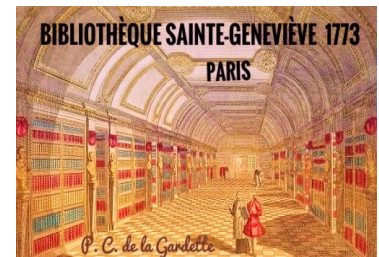
Étienne Bonnot de Condillac

French, born Grenoble, 1714
Essay on the Origin of Human Knowledge;   Treatise on Systems;   Treatise on Sensations
* *Logic*   at the behest of a leading Polish aristocrat; finished less than a year before death
Ordained a priest but with a substantial family inheritance chose a life of study and writing
Always wore a cassock but reportedly said mass only once and otherwise chose not to exercise the office
Very much influenced by [John Locke's](#) **Essay Concerning Human Understanding**
Argued that man has neither innate ideas nor innate cognitive abilities
Held forth at the Paris salons and maintained a close friendship with Jean-Jacques Rousseau and Denis [Diderot](#)
Decried the Rationalism as typified by [Descartes](#) and [Spinoza](#),
Reportedly remained a observant Catholic, although accused of Materialism–an anathema especially for a priest

[Les Philosophes](#)   [Church summary and critique](#)   [Biography](#)

Aristotle, in his **logic**,
having reduced all demonstrations to a train of arguments
drawn up in a syllogistical form,
and then divided all imaginable propositions
under four heads, teaches us to discover,
among the possible combinations of propositions
of these four classes in collections of three and three,
those which answer to the nature of conclusive syllogisms,
and may be admitted without apprehension.
In this way we may judge of the cogency or weakness
of an argument, merely by knowing to what class it belongs:
and thus the art of right reasoning
is subjected in some measure to technical rules.
This ingenious idea has hitherto remained useless;
but perhaps it may one day become
the leading steps toward a perfection
which the art of reasoning and discussion
seems still to expect.*

self-portrait

DEATH OF CONDORCET

LYCÉE CONDORCET
Jean Beraud 1903
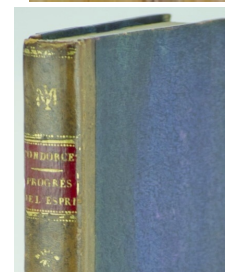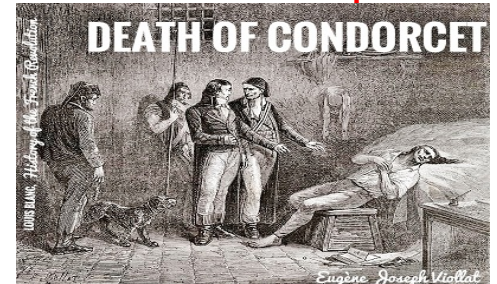
RIBEMONT

Nicolas Marquis de Condorcet

French, born Ribemont, 1743
Progress of the Human Spirit   (written while hiding during the Reign of Terror)
On the Probabilities of Majority Decisions
"Reflections on Negro Slavery";   "On a Woman's Right of Citizenship";   "Public Education"
Prominent promulgator of the ideas of progress and perfectibility
Significant contributor to the ***Encyclopédie***
"Rediscovered" and refined the consensus voting methods set forth by Ramon Llull in the 13th century!
High standing amongst French and European literati and Americans such as Jefferson and Franklin
Fierce in opposition to slavery and in support of women's rights
His moderate ideas misinterpreted, was declared a traitor by the Jacobin extremists after the Revolution
Wife Sophie née Grouchy (above) a respected literary figure, artist, and salon hostess
Arrested only to die in prison, by murder(?) or suicide(?)
Famed Paris lycée (above) in his honor, graduates Henri Bergson and Marcel Proust

 (Interesting ideas on voting)   http://www-history.mcs.st-and.ac.uk/HistTopics/Voting.htm   FIND POSTAGE STAMP

http://www.nndb.com/people/882/000093603/   http://www.humanistictexts.org/condorcet.htm   http://www.enotes.com/topics/condorcet

This science of the necessary laws of the understanding
and of reason in general, the mere form of thinking, we name **Logic.***

Logic can't have anything empirical about it.
It can't have a part in which universal and necessary laws of thinking
are derived from experience.
If it did, it wouldn't be **logic**, that is, a set of rules
for the understanding,
rules that are valid for all thinking.**

That **logic** has been so successful, is due to its advantage of limitation,
by virtue of which it is obligated to abstract itself
from all objects of knowledge and their differences; and in **logic**, thus, the
Understanding deals with nothing more than itself and its form.
Naturally, it must be much harder for Reason to pursue
the sure course of science when she has not only to deal with herself,
but also with objects;.
Logic thus constitutes, only the vestibule of the sciences,
and though a **logic** certainly must be presupposed
for any judgment of substantive truths,
these must be sought out and acquired in the sciences themselves.***
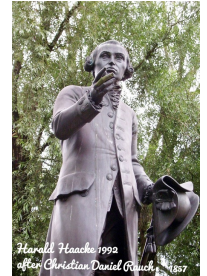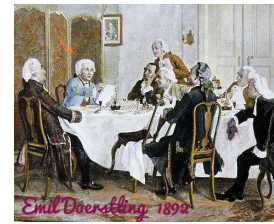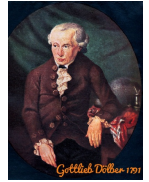
Immanuel Kant

German, born Königsberg, Prussia, 1754
*Logic
**Groundwork of the Metaphysics of Morals
***Critique of Pure Reason   (a work of unsurpassed genius and influence)
Prolegomena to any Future Metaphysics
Critique of Practical Reason; Critique of Judgment, On Pedagogy
Arguably the greatest philosopher since Aristotle
Demonstrated that the possibility of knowledge is not an empirical question
Held fast to Aristotle's logic:

"Logic has not gained much since Aristotle's time, indeed it cannot.
Logic is in a permanent state from which it cannot undergo any change." * §

Lived his entire life in Königsberg
Despite his genius in moral philosophy, still regarded non-Europeans as inferior
Formulated (with [Laplace](#)) the Nebular Hypothesis regarding the formation of the Solar System   (above)
Famous for self-discipline and extreme punctuality
Lunar crater named for him

§
Despite this encomium, and despite even his own non-recognition of it, Kant's *Critique of Pure Reason* utterly transfigured
the \basis of (and the face of) logic and brought on its rapid evolution ever since.

By studying **logic**, your mind acquires
self-reliance and independence.
You become at home in abstractions
and you can progress
using ideas that are free from
the coming and going of the moment.
You develop an unsuspected power
of assimilating in rational form
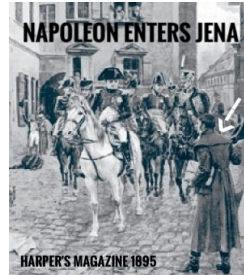all the complex branches of knowledge.
....
By studying **logic**
you begin to grasp and retain
the essential character
of all the sciences, stripping them
of their external features
and in this way
extracting the **logical** element
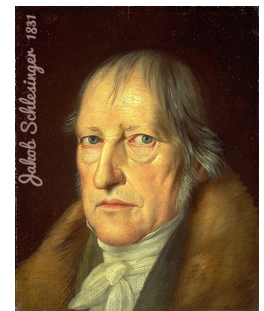they hold in common.*

Žgidien-Gymnasium Nuremberg
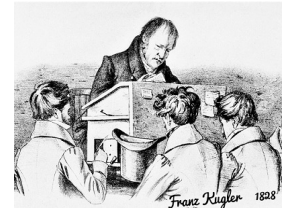
Georg Wilhelm Friedrich Hegel

German, born Stuttgart, Württemberg, 1770
Science of Logic   (published while headmaster, Žgidien-Gymnasium, Nüremberg)
Phenomenology of Spirit,   Encyclopedia of the Philosophical Sciences
Elements of the Philosophy of Right
Prominent figure in the history of philosophy
Eminent professor at Jena, Heidelberg, and Berlin
Writings are highly complex, difficult, and rather murky
Held that logical form is its own content
Being and Becoming central to all philosophy, including logic
While upholding white superiority, supported peaceful progress toward freedom and equality
Witnessed and was impressed by Napoleon's triumphal march through Jena (above)
Died in the cholera epidemic of the 1830s
Hegel's last words: **"They didn't understand me."**

http://www.sparknotes.com/philosophy/hegel/section4.rhtml   FIND POSTAGE STAMP
http://hegel.net/en/hegelbio.htm

Knowledge of **logical** rules will not indeed supply
the want of other knowledge; nor was it ever proposed,
by any one who really understood this science,
to substitute it for any other : but it is no less true
that no other can be substituted for this;
that it is valuable in every branch of study;
and that it enables us to use to the greatest advantage
the knowledge we possess. *
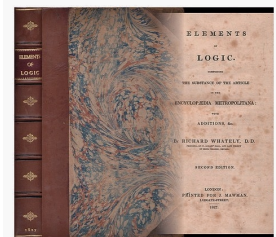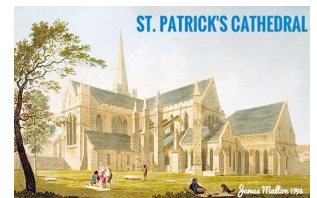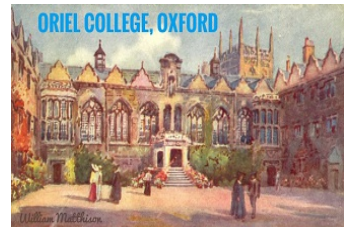
If such an **[illogical]** argument as this be proposed,
"every rational agent is accountable;
brutes are not rational agents;
therefore they are not accountable",
there are some, perhaps,who would not perceive any fallacy
in such an argument, especially when the conclusion is true,
and others might perceive indeed,
but might be at a loss to explain the fallacy.
Now the argument exactly corresponds with the following,
the absurdity of the conclusion from which is manifest:
"every horse is an animal;
sheep are not horses;
therefore they are not animals"
[This] corresponds exactly (considered as argument) with the former;
the question respecting the validity of an argument being,
not whether the conclusion be true,
but whether it follows from the premises adduced.
This mode of exposing a fallacy,by bringing forward a similar one
whose conclusion is obviously absurd,is often very advantageous.* §

Richard Whately

British, born London, 1787
Elements of Logic   (standard logic text at Oxford for several decades)
"Easy Lessons on Reasoning" (in a magazine, anonymously, during early fellowship at Oriel College)
The Use and Abuse of Party Feeling in Matters of Religion
Letters on the Church, by an Episcopalian
Introductory Lessons on Morals and Christian Evidences
Archbishop of Dublin   (St. Patrick's Cathedral, above)
Theologian, educator, moralist, economist, reformer, social activist, and historian
Crossed his legs in a very odd way, and often seen accompanied by a very large white dog

§ see similar by [Jevons](#) and [Peter of Spain](#)

This link is to Whately's influential text book. We recommended the Preface. as it is a well-crafted expression of the importance of Logic.
http://www.archive.org/details/elementslogicco12whatgoog

It is the task of **logic** to give rules
which apply simultaneously
to a whole class of truths.
For this reason, **logic** never concerns
a particular, fully determinate proposition,
but rather, a whole class of propositions at once.
If these classes of propositions
are to be called general forms of propositions,
then it is permissible to say
that **logic** is concerned with forms
rather than with individual propositions.
...
If the mere clear representation of a proposition M
does not lead to a judgment about it,
or if this judgment does not appear reliable enough,
the next stage in its testing is that we attempt to deduce,
either from M alone, or from M together with
other already known premises,
several consequences and from these further consequences.
If we recognize any one of these consequences as false,
then we are entitled to the conclusion
that our tentative hypothesis M itself is false.*
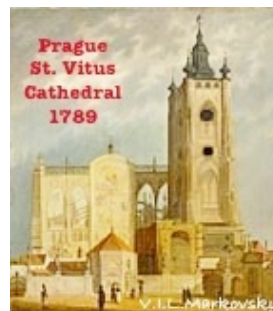
Bernard Bolzano

Bohemian, born Prague, 1781
Theory of Science, a Detailed and Novel Exposition of Logic
Contributions to a Better-Grounded Presentation of Mathematics
Treatise of the Science of Religion, Paradoxes of the Infinite
Logician, mathematician, philosopher, theologian, Catholic priest
Recognized as the greatest logician between Leibniz and Frege
Professor Ordinaire at Charles University, Prague
Anti-military and social reform views angered faculty/church authorities
Hence expelled, forbidden to publish, and chose to leave the city
But granted a Royal pension, could totally devote himself to scholarship
Argued that propositions are abstract, true or false, mind-independent objects
And that these objects are the content of judgments and the meaning of sentences
Prodigious writings fill 90 large volumes
His work largely "re-accomplished" decades later, thus obscuring his genius

https://www.bu.edu/wcp/Papers/Teac/TeacLore.htm   FIND POSTAGE STAMP

Logic claims our attention
as one of the first arts to which we should apply,
in our progress towards knowledge, either as the best means
of fortifying or of improving the understanding.
The more acute the understanding is, the more successful
will it be in the investigations of science.
Every thing, then, in **logic** that does not contribute
to improve the understanding, and to promote our progress
in useful knowledge, deserves no attention;
but every thing, on the other hand, that promotes these ends,
cannot obtain more attention than it deserves......
So – though no art ever gave occasion
to so much idle research and fanciful refinement as **logic**;
though none ever so much bewildered the human mind,
and repressed every useful exertion of the understanding,
as that which pretended to enlighten and improve this faculty,
and to guide it in the road to truth, – we must not rashly conclude
that these abuses furnish proofs of the general inutility,
or insignificance, of **logic**.*
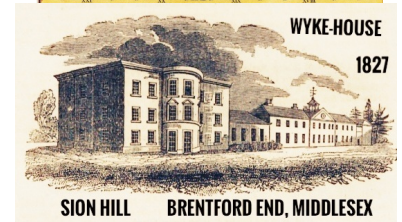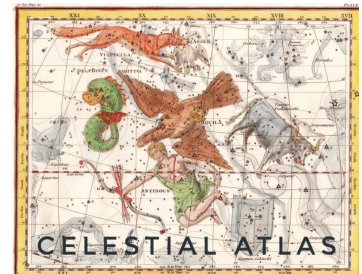
Alexander Jamieson
(no known representation)

British, born Rothesay, Isle of Bute, 1782
A Grammar of Logic and Intellectual Philosophy, many UK and USA editions
Celestial Atlas, highly regarded, widely used, even splendid color plates (above)
A Grammar of Rhetoric and Polite Literature, several more textbooks
Marischal College, Aberdeen, M.A. and LL.D.
St. John's College, Cambridge, Ten-Year-Man and sizar, apparently no degree
Public schools: Headmaster at Wyke-House; resident scholar at Heston-House
Both schools failing, became an itinerant actuary, died impoverished in Belgium

https://archive.org/details/grammaroflogicin00jami
https://archive.org/details/dictionaryofmech01jami
https://www.abebooks.com/blog/index.php/2018/07/05/jamiesons-heavenly-celestial-atlas-from-1822/

It is clear that **logic** deals with a subject
of a purely a priori character,
separable from experience,
namely, the laws of thought
which reason follows when it is left to itself.
Yet, though it is concerned
with the mere form,
logic has objective truth.*
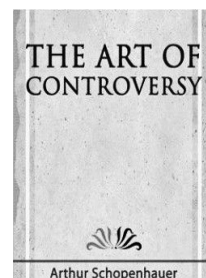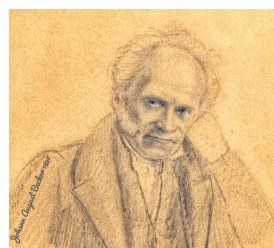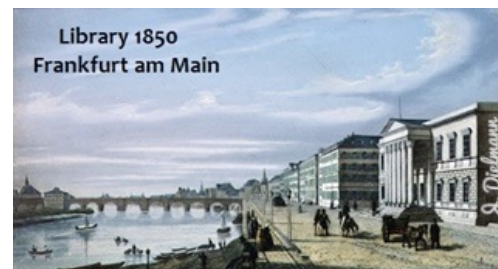
Arthur Schopenhauer

German, born Danzig, 1788
The Art of Controversy–Logic and Dialectic
The World as Will and Representation, On the Will in Nature
The Freedom of the Will, Foundations of Morality
Was much influenced by the *Upanishads* doctrine that there are no values in blind nature
Most productive years in Dresden
Stressed that our Will-to-Power creates illusions over which we are virtually powerless
"The most rational philosopher of the irrational" (Thomas Mann)
Having a family inheritance, never held a professorship nor had any vocation
Gave sparsely attended lectures at several universities
Was a life-long pacifist
Spent his last 35 years mostly alone in Frankfurt am Main with his pet dogs

http://www.friesian.com/arthur.htm

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Logic [*broadly*] is not concerned with the manner in which
the elements utilized by thought come into existence,
but with their value, when they have somehow or other
come into existence, for the carrying outof intellectual operations...
Pure or formal **logic** is devoted to thought in general
and those universal forms and principles of though
which hold good everywhere,both in judging of reality
and in weighing possibility,
irrespective of any difference in the objects.*

I only wish to remind the reader of the ease with which
a thirst for knowledge is, to its own injury, often satisfied
by being merely taught how
to bring a particular case under its universal;
of the ineradicable desire to make events and conditions intelligible
by reference to their place in some system of classification,
even when it happens that their true nature can only be understood
by reference to the co-operation of their special conditions;
of the whole mass of timid or presumptuous **logic** which has introduced
such a variety of sophisms into the treatment of Nature and of life
at one time being brought to a standstill by
the most insignificant distinctions
of objects, and even demanding different treatment for different kinds
of relations, at another time passing lightly over innumerable differences,
and requiring a similar treatment of everything
which may by some remote possibility
be brought under the same generic concept.**
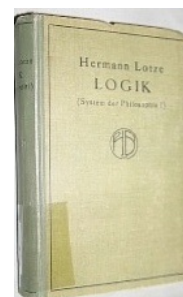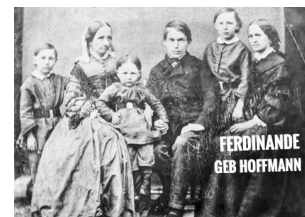
Hermann Lotze

German, born Bautzen, Saxony,1817
Logic: In Three Books (trans. [Bernard Bosanquet](#))
**Microcosm* (trans. [Constance Jones](#))
Philosopher and both a practicing and research physician
Concurrent professorships in Philosophy and Medicine at Leipzig and Göttingen
Led the move away from abstract idealism and toward an objective approach to philosophy
Strongly opposed reducing logic to empirical psychology
Held that sound philosophy should not (indeed <u>cannot</u>) reject scientific facts
A skilled linguist, writing in German, French, Latin, and English
His lectures attended by [Gottlob Frege](#)
Also a published poet

https://books.google.com/books?id=A5tRAAAAMAAJ&pg=PA1&lpg=PA1&dq=lotze+philosopher&source=bl&ots=_MbsW4wKhC&sig=ACfU3U0RAszt9yL1nXrEQ25z3awKWbE45w&hl=en&sa=X&ved=2ahUKEwjtyaua79LrAhXZlHIEHeoUDa04HhDoATADegQICRAB#v=onepage&q=lotze%20philosopher&f=false

[TOC](#)

It is very commonly said that studies which exercise
the thinking faculty, and especially mathematics,
are means of cultivating **logic**, and may stand
in place of systematic study of that science. This is true so far,
that every discipline strengthens the logical power:
that is to say, strengthens most of what it finds,
be the same good or bad. It is further true that every discipline
corrects some bad habits...and tends to confirm some bad
habits. Accordingly, though every exercise of mind does much
more good than harm, yet no person can be sure of avoiding
the harm and retaining only the good, except by....
a proper study of **logic** and is seldom made without it.*

It is not therefore the object of **logic**
to determine whether conclusions be true or false,
but whether what are asserted to be conclusions
are *conclusions*.
By a *conclusion* is meant that which is and must be
shut in with certain other things put in first.
It is that which must have been put into a sentence
because certain other things were put in.**
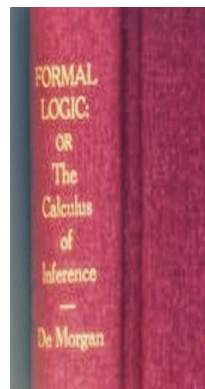
Augustus De Morgan

British, born Madurai, India (a British subject), 1806
Syllabus of a Proposed System of Logic
**Formal Logic or The Calculus of Inference*
First Notions of Logic,   The Elements of Arithmetic, An Essay on Probabilities
Memoir of Augustus De Morgan, by his wife Sophia Eliza née Frend (link below)
Professor of Mathematics and Logic at University College London
Joined with Eliza in prolonged and serious investigations in spiritualism
Bequeathed De Morgan's Law and advanced the logic of relations
Accomplished flautist and, briefly, a lawyer
Friendship with neighbor Charles Dickens via Eliza's efforts as a social reformer
Never felt comfortable anywhere outside of London

http://archive.org/stream/memoiraugustusd01morggoog/#page/n10/mode/2up

http://www.gutenberg.org/dirs/etext06/tbmms10p.pdf   [2nd lecture]

In a **logical** system, nothing must be taken on
that has a relation to life itself,
nothing that is not indifferent to existence.
The infinite advantage over all other thinking
held by the **logical**, by being objective,
is limited inturn by the fact that, seen subjectively,
it is a hypothesis just because
it is indifferent to life in the sense of actuality.
This double nature of the **logical**,
the objective and the hypothetical,
work together as the unity and the contradiction
in which it relates negatively to existence.*
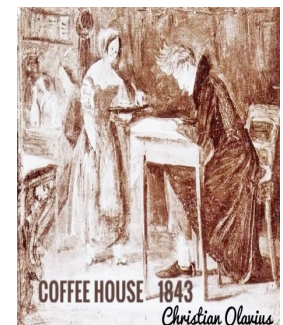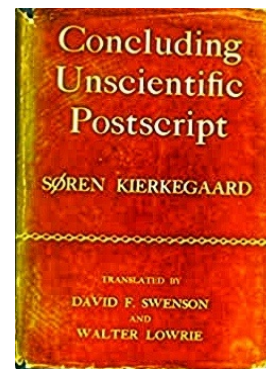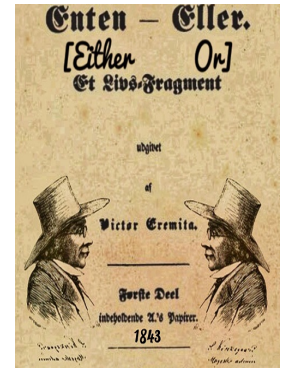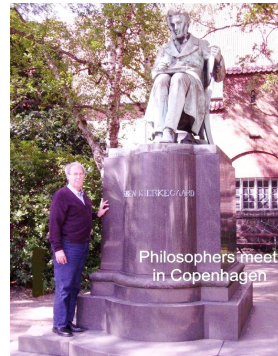
Søren Kierkegaard

Danish, born Nytorv 1813
Conculding Unscientific Postscript
 Either/Or;   Fear and Trembling;   The Sickness Unto Death; Practice in Christianity
Passionately critical in rejecting the prevalent idealism stemming from Hegel
Allowed that science explains by observation, but denied that observation can grasp our spirit
Often published under a pseudonym (see *Either Or*, above(
Frequent long walks in the back streets of Copenhagen (above)
Strove to discover how to become a Christian while engulfed in the false institution of Christendom.
Subsequently enshrined as the Father of Existentialism

   "Søren Kierkegaard was by far the greatest thinker of the nineteenth century."... Ludwig Wittgenstein

   " 'We live forward, we understand backward', said Kierkegaard". .... William James

http://denmark.dk/en/meet-the-danes/great-danes/writers/soeren-kierkegaard/

https://archive.org/details/kierkegaardsatta00kier

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If possible, find some genial friend,
who will read the book along with you,
and will talk over the difficulties with you.
Talking is a wonderful smoother-over of difficulties.
When I come upon anything——in **Logic**
or in any other hard subject——that entirely puzzles me,
I find it a capital plan to talk it over, *aloud*,
even when I am all *alone*.
One can explain things so clearly to one's self!
And then, you know, one is so patient with one's self:
one never gets irritated at one's own stupidity!
....
Once master the machinery of Symbolic **Logic**,
and you have a mental occupation always at hand,
of absorbing interest, and one that will be of real use
to you in any subject you may take up.
It will give you clearness of thought
the ability to see your way through a puzzle
the habit of arranging your ideas in an orderly and get-at-able form,
and, more valuable than all, the power to detect fallacies,
and to tear to pieces the flimsy **illogical** arguments,
which you will so continually encounter in books,
in newspapers, in speeches, and even in sermons,
and which so easily delude those
who have never taken the trouble to master this fascinating Art.
...
I claim, for Symbolic **Logic**, a very high place
among recreations that have the nature of games or puzzles
and I believe that anyone, who will really try to understand it, will find it
more interesting and more absorbing than most games or puzzles yet invented:
the real occupation and the real enjoyment come when the reader has gained
the power of solving for himself the fascinating *problems* of Science.
And this power is far sooner, and far more easily, acquired
in Symbolic **Logic**, than it is in the Science as taught in the ordinary text-books.*
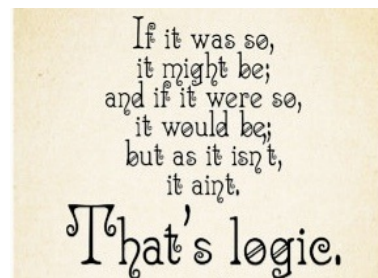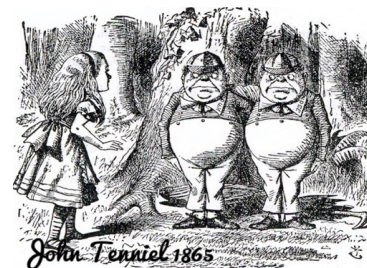
Charles Lutwidge Dodgson

British, born Daresbury, Cheshire,1832
Symbolic Logic
Alice's Adventures in Wonderland
Through the Looking-Glass
Mathematics Lecturer at Christ Church, Oxford
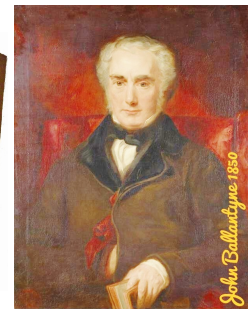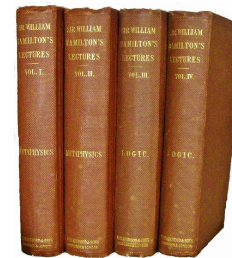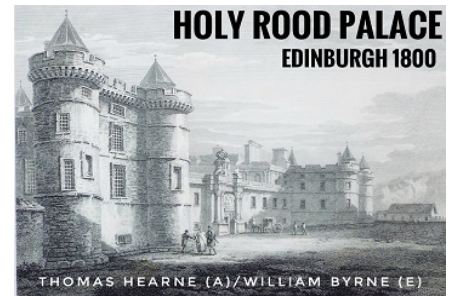Wrote advanced logic texts and logic puzzle books
Better known then and now as Lewis Carroll
Excellent at charades, accomplished photographer, and inveterate microscopist

in MEMOIRE
John Veitch 1869

UNIVERSITY OF EDINBURGH
1853

As the rules of **logic** do not regard the matter
but only the form of thought,
the utility of **logic** must, in like manner,
be viewed as limited to its influence
on our manner of thinking, and not sought
for in any effect it can exert upon what we think about.
It is, therefore, not to be considered useful
as a mean of extending our knowledge
by the discovery of new truths;
but merely as a formal instrument, that is, as a mean
by which knowledge, already acquired,
may be methodized into the form
accommodated to the conditions of our understanding.....
Another utility is, that **logic** alone affords us
the means requisite to accomplish a rational criticism,
and to communicate its results.*

EDINBURGH'S GRASSMARKET 1850

anonymous

HOLY ROOD PALACE
EDINBURGH 1800

THOMAS HEARNE (A)/WILLIAM BYRNE (E)

cf. Gassendi, Pascal, Minto, Popper

John Ballantyne 1850

William Hamilton

British, born Glasgow, Scotland, 1788
Lectures on Modified Logic
Discussions on Philosophy and Literature, Education, and University Reform
Notes and Dissertations, Lectures on Metaphysics and Logic
Scientist, logician, historian, philosopher
Formulated ground-breaking ideas concerning logical form and relational predicates
Championed the use of psychology in education
"A man of true and rare inventive genius" (in obituary by Augustus De Morgan)
Salary as professor at the University of Edinburgh came from a local tax on beer

http://www.bartleby.com/224/0105.html

http://www.archive.org/details/chaptersinlogicc00hamiuoft

READ TOMBSTONE INSCRIPTION

In every enterprise
the mind is always reasoning,
and, even when we seem
to act without a motive,
an instinctive **logic** still directs the mind.
Only we are not aware of it,
because we begin by reasoning
before we know or say
that we are reasoning,
just as we begin by speaking
before we observe that we are speaking,
and just as we begin seeing and hearing
before we know
what we see or what we hear.....
The experimenter forces nature to reveal itself
by attacking it and asking it questions
in all directions; but he should never answer for her
nor listen to her answers incompletely,
taking from experiment only that part of the results
which favor or support a hypothesis.....
When a fact that emerges
contradicts a prevailing theory
we accept the fact and abandon the theory,
even when the theory is generally accepted.*§
.
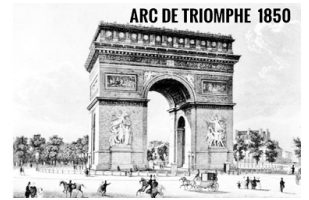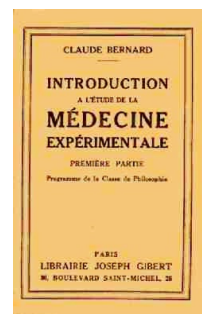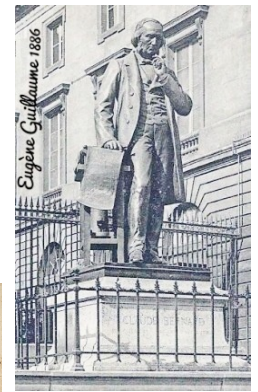
Claude Bernard

French, born Saint-Julien, 1813
An Introduction to the Study of Experimental Medicine
Physiologist and historian of science at Collège de France
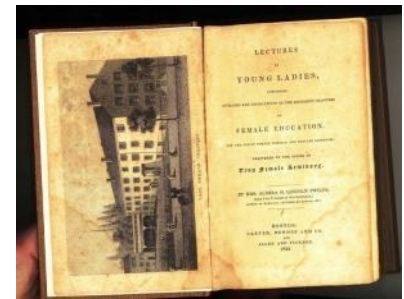Formulated the method of "blind experiment"
Wrote vaudeville comedy sketches
France's first public funeral for a scientist

§ cf. [Popper](#), [Hamilton](#), [Minto](#), [Pascal](#)

http://www.cerebromente.org.br/n06/historia/bernard_i.htm   FIND POSTAGE STAMP

The study of **Logic** should precede that of Intellectual Philosophy.
As it is now taught, this science differs much
from the **logic** of Aristotle and the ancient schools;
with them it was a tissue of subtleties and absurdities;
it taught to support both truth and error, furnishing arms alike to both.
Amid the multiplicity of rules for the guidance of reason,
reason herself seemed wholly lost sight of.
It was like loading a warrior with armor
until crushed and buried beneath its weight.
The ancient prejudices with respect to modes of reasoning,
for a long time kept every science in a state of obscurity;
for on the free exercise of the reasoning power in man,
depends every degree of improvement in scientific research;
indeed, there can be no research when reason is fettered.
Thus, in attempting to foster and improve reason,
she became bewildered and exhausted.
....
The proper object of **logic** is to teach the operations of the human mind,
the method of reasoning and arrangement
which is conformable to those laws,
and to distinguish truth from error.
So far, then, from being an artificial science, **logic** ought to be a deduction
from observations made upon the nature and operations of the mind.* §

.

Almira Hart Lincoln Phelps

American, born Berlin, Connecticut, 1793
The Female Student, Lectures to Young Ladies, #23
Natural Philosophy;   Our Country;   Lectures on Botany; Progressive Education;   Hours With Students. ...more
Virtual co-founder (with her sister Emma) of Troy Female Seminary (later Emma Willard Preparatory School)
Youngest of 17 children, extensive home schooling, opened her own school at age 18, yet denied college entrance
Second woman member of the American Association for the Advancement of Science (1859)
Principal at Petapsco Female Institute in Maryland
Maryland Women's Hall of Fame (2010)
Incredibly, a staunch opponent of women's suffrage

§ This view of logic which is still widely prevalent in general education merits comment.
Formal logic is easily regarded as barren if seen as a way of advancing knowledge, but it is wrong
to suppose that logic must thus be more relaxed and informal.

What is **Logic** ?

Logic is a science which teaches us how to think,
reason, judge–to discover truth and to communicate it
to others; it is, as it were, the key to all the other sciences.
...Up to now, the science of **logic** has been sealed
in learned tomes, thus depriving young ladies
of facility in learning it, at least until they entered
the highest classes; and since few complete
the full course of studies at academies,
logic has been not been acquired.
This should not be.
Women have as much need of **logic** as the sterner sex.
Moreover, as women are deemed prone to frivolity,
they should be early accustomed to reflect,
to render an account of their thoughts,
and draw proper conclusions. They will then be capable
of sowing the seeds of sound **logic** in those
whom their position obliges them to instruct.
Let young ladies beware of being repelled
by the difficulties and dryness which they discover
in the pursuit of **logic**; for the highest
and the most abstract sciences have been grasped
by the gentler sex, and many ladies
have attained fame in the pursuit of profound learning.*
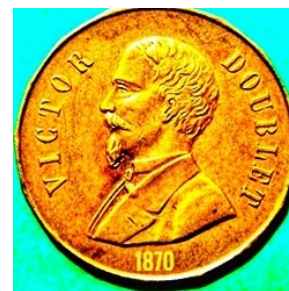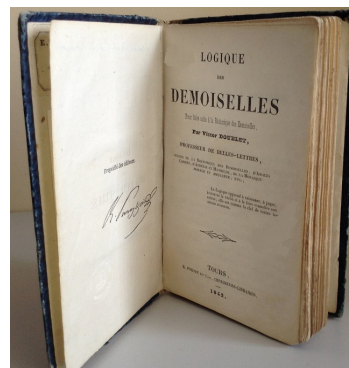
French, born Orléans, 1806   Victor Doublet
*Logic For Young Ladies (*a remarkably prescient publication*)
The Rights, Duties, and Interests of French Citizens, New Collection For Dictation Graduates
A Practical Course on the Subjects and Development of Letters and Essays
A Family Guide in Choosing Careers for Children
The Benefactors of Humanity, The Real Treasure of the People
Wonderful Secrets of Nature, Medicine, Industry, Science, Art, Thoughts and Kind Words*
        even instructs the proper ways to preserve apricots, raise pigs, polish silver, and kill rats
Inventor and well regarded for popularizing science and education
Professor of Belles Lettres and Foreign Languages in Bourges

I am persuaded that nothing in modern education,
tends so much as **logic**,
when properly used, to form exact thinkers.*

In so far as belief
is to be founded on proof,
the office of **logic** is to supply a test
for ascertaining whether or not
the belief is well founded.**

It is universally allowed that a syllogism is vicious
if there be any thing more in the conclusion
than was assumed in the premises.
But this is, in fact, to say,
that nothing ever was, or can be, proved by syllogism,
which was not known, or assumed to be known, before.
....It must be granted that in every syllogism
considered as an argument to prove the conclusion,
there is a *petitio principii* [begging the question].**§
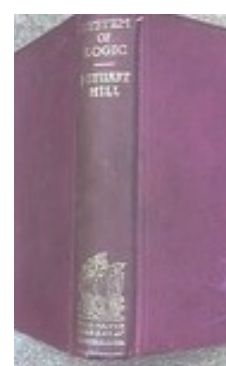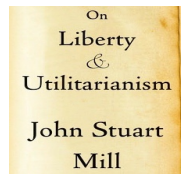
John Stuart Mill

British, born London, 1806
Autobiography; Principles of Political Economy
***System of Logic** (Laying out new logical models for gaining knowledge through experience)
On Liberty—Individual freedom, democratic but limited government
Utilitarianism— Ethics based on consequences and happiness
Home schooled and never attended college (except an aborted attempt at Law)
A philosopher of paramount impact ever since
Argued, wrote, and worked for equality: economic, racial, sexual, religious–the lot
Elected MP, proposed Proportional Representation and Women's Suffrage
Flatly rejected by Commons; his 'logic' lampooned in *Punch*   (cartoon above)
Son of famed James Mill, economist, penal reformer, historian
Godfather to Bertrand Russell

§ A persuasive (though controversial) critique of Aristotelian logic, yet anticipated by Pierre Gassendi 200 years prior

http://www.bartleby.com/224/0108.html

HE LEADETH ME

Joseph H. Gilmore

1862

Seventy-fifth Anniversary
of the
Second Baptist Church
Rochester, New York
Report of "Pastors' Night"
March 10, 1909
with
Address of Joseph H. Gilmore, D. D.

Second Baptist Church
Rochester, NY   1906

Logic has to do exclusively with the form
not at all with the matter of thought.
....
Both the inductive and the deductive processes
fall within the scope of **logic**,
but it is the deductive process
which **logic** has until recently especially emphasized.
The tendency now is to attach
equal if not superior importance to inductive **logic**
and this tendency is doubtless in the right direction.*

Anderson Hall
c. 1910

OUTLINES OF LOGIC.

J. H. GILMORE, A. M.

NEW YORK:
D. APPLETON AND COMPANY,
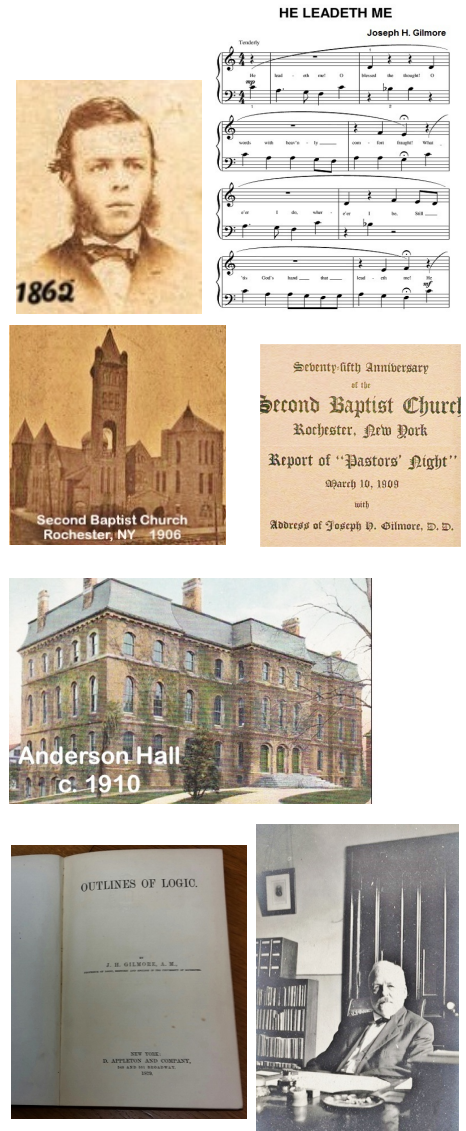
Joseph Henry Gilmore

American, born Boston, Massachusetts, 1834
*Outlines of Logic
The Art of Expression, Familiar Chats on Books and Reading
Outlines of English and American Literature
Ordained Baptist minister
University of Rochester professor of Theology, Rhetoric, Logic, Hebrew, and English
At age 28, wrote the still widely used hymn "He Leadeth Me" (See first link below)
Inspired by 23rd Psalm and about which he later wrote:

> **"It was the darkest hour of the Civil War. I did not refer to that fact—that is, I don't think I did—
> but it may sub-consciously have led me to realize that God's leadership is the one significant
> fact in human experience that it makes no difference how we are led, or whither we are led,
> so long as we are sure God is leading us."**

Owens College c. 1890
Manchester

Strictly speaking, **logic** has nothing to do
with a proposition by itself;
it is only in converting or transmuting
certain propositions into certain others
that the work of reasoning consists,
and the truth of the conclusion
is only so far in question
as it follows from the truth of the premises...
If the following were put forth as an argument
it would be evidently absurd:

> **Sirius is not a planet.**
> **Planets are not self-luminous.**
> **Therefore Sirius is not self-luminous.**[§]

Both the premises given are true,
and yet the conclusion is false,
for all the fixed stars are self-luminous.*

Logic Piano

William Stanley Jevons

British, born Liverpool, 1835
Elementary Lessons on Logic   (soon a widely used textbook)
The Theory of Political Economy   (highly influential down to the present day)
The Principles of Science   (masterstroke of scientific methodology and induction)
Early years in Australia formed his basic ideas on logic and scientific method
Student of Augustus De Morgan
Built a logic machine, the **Logic Piano**, forerunner to Babbage's Analytic Engine
In economics, argued that value is simply the utility a product affords the buyer
As a Unitarian, was barred from the Universities of Oxford and Cambridge!
Tutor Owens College, Manchester, graduate/Professor at University College, London
Enjoyed travel, photography, music, and most of all swimming
Drowned swimming in the English Channel off Hastings, East Sussex

[§] **Though obviously invalid, this argument is pedagogically ineffective,**
  since virtually no one would set forth an argument with this logical form. Better would be:
   "Sirius is not the North Star; The North Star is self-luminous; thus Sirius not self-luminous."
see similar by Whately and Peter of Spain

http://www.rutherfordjournal.org/article010103.html

Logic embraces, the most fundamental
and universal of all principles:
Consistency, Deduction, and Uniformity.
It reposes upon
nothing more fundamental than itself,
and it gives foundation
to all the other sciences.
There can be no science without assuming
all the data of **logic**,
whether avowedly or not.*

Logic is nothing, if not training.
The information mixed upwith it
is all to be used for training purposes.
It is the element of scientific form,
which is more thoroughly impressed
by being singled out for special consideration.
It is the grammar of knowledge.*
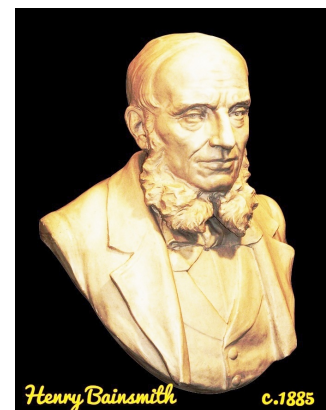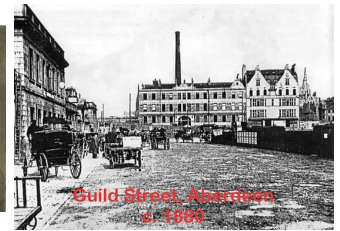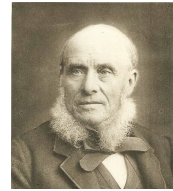
Alexander Bain

British, born Glasgow,Scotland, 1818
Logic: Deductive and Inductive (highly respected textbook of the time)
The Senses and the Intellect (first ever and standard psychology text for over a half century)
The Emotions and the Will;   Mental and Moral Science;   Education as a Science
Regius Professor of Logic at the University of Aberdeen
Held (controversially) that logic in grounded in psychology
Stressed the application of logic to all fields of study, including education
Showed how the principles of logic apply, specifically, in the various sciences
Originated "scientific psychology": the linkage between anatomy/physiology and psychology
Emphasized the importance of conscious movement
Led toward the functionalist psychology of adaptive behavior
Brought forward Psychological Parallelism–still an unopposed given principle
Advocated new education methodologies (such as "incentive/reward")–many employed ever since
Founded (and funded) *Mind*–still the archetype journal for Philosophy and Psychology
Self-disciplined in the extreme: a set time each day to: rise, eat, bathe, read, nap, write, exercise, bed, etc.

http://fair-use.org/mind/1904/01/notes/professor-bain

It is sufficient that **logic**,
without entering into
all the phenomena of mind,
provides certain forms which a judgment,
to be legitimate, must exhibit,
certain tests by which fallacy may be detected,
and certain barriers
against ambiguity in the use of language.*
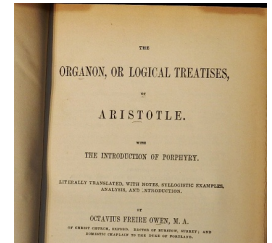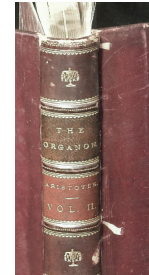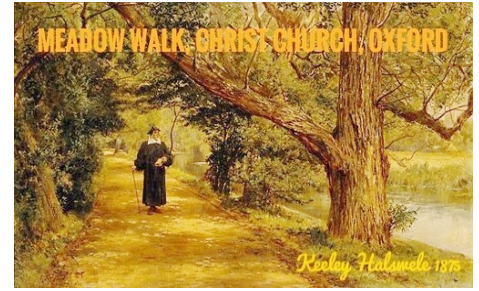
Octavius Freire Owen
(no known representation)

British, born Edmonton, Middlesex, 1816
*Introduction to his translation: *The Organon of Aristotle, with Porphyry's Isagogue*
                      (first complete modern English translation, with extensive notes and even exercises)
The Fables of John Gay (with memoir, introduction and annotations by John Gay)
A Refutation Recently Discovered of Spinoza by Leibnitz
M. A., Christ Church, Oxford
Ordained deacon and priest
At various times, Vicar of Childswickham, Rector of Burstow, and Chaplain of the Duke of Portland
Fellow of the Society of Antiquaries
Wife Emily Montague, author of still very well worth reading feminist fiction and non-fiction: **(see 2nd link)**
       The Heroines of Domestic Life
       The Heroines of History
       Raised to the Peerage
Ten children

Why describe **logic** as a system of defense against error?
Why say that its main end and aim is the
organization of reason against confusion and falsehood?
Why not rather say, as is now usual,
that its end is the attainment of truth?
Does this not come to the same thing?
....
Substantially, the meaning is the same,
but the latter expression is more misleading.
To speak of **logic** as a body of rules
for the investigation of truth has misled people into supposing
that **logic** claims to be an art of discovery,
that it claims to lay down rules by simply observing
which investigators may infallibly arrive at new truths.
Now, this does not hold even of the **logic** of induction,
still less of the older **logic**, the precise relation of which
to truth will become apparent as we proceed.
It is only by keeping men from going astray and by disabusing them
when they think they have reached their destination
that **logic** helps men on the road to truth.
Truth often lies hid in the centre of a maze,
and logical rules only help the searcher onwards by giving him warning
when he is on the wrong track and must try another.
It is the searcher's own impulse that carries him forward:
Logic does not so much beckon him on to the right path
as beckon him back from the wrong.
In laying down the conditions of correct interpretation,
of valid argument, of trustworthy evidence, of satisfactory explanation,
logic shows the inquirer how to test and purge his conclusions,
not how to reach them.* §

§ cf. passages by [Cicero](#), [Poincaré](#) , and [Popper](#)

William Minto

British, born Auchintoul, Aberdeenshire, Scotland, 1845
* *Logic, Inductive and Deductive*
Literature of the Georgian Era
Crack of Doom   a somewhat well received novel in Britain and America
Successor to [Alexander Bain](#) at the University of Aberdeen
Though Regius Professor of Logic, was much more inclined to Literature
Lectures and books on Pope, Dryden, Defoe, Wordsworth, Byron, Shelley, Keats. and others
Prolific contributor to the *Weekly Examiner*, *Encyclopedia Britannica*, and other literary publications
Deemed it degrading to allow himself to be given electric shock just for a classroom demonstration
    Was thus dismissed from his Natural Philosophy [science] assistantship
Enjoyed golf at Cruden Bay (above)

https://archive.org/details/logicinductivea01mintgoog/mode/2up
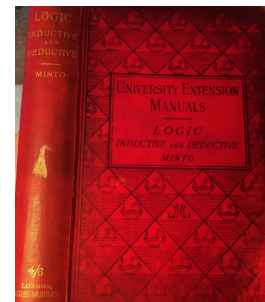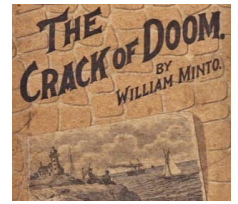
see excellent "Biographical Introduction", especially pages xii-xiii and impresive obituary POEMS

The intimate connection
between Thought and Language
has caused some writers
to maintain that **logic**
is entirely conversant about Language
But it is not so,
for **logic** is primarily and essentially
conversant with thought
and only secondarily and accidentally
with language.
That is, **logic** treats of language
so far only
as it is the vehicle of thought.*
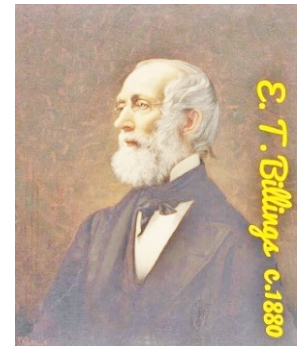
Francis Bowen

American, born in Charlestown, Massachusetts, 1811
A Treatise on Logic
Critical Essays on the History and Present Condition of Speculative Philosophy
Documents of the Constitution of England and America
Principles of Political Economy, American Political Economy
Modern Philosophy, from Descartes to Schopenhauer and Hartmann
Gleanings from a Literary Life
A Layman's Study of the English Bible
Harvard professor of philosophy
Turned more to literary concerns as editor and proprietor of the *North American Review*
Denied History professorship due to his critique of the Hungarian revolution of 1848!!!
Focused on social changes resulting from economic conditions
Propounded agreement between philosophy and Christianity
His life and writings infused with piety
Member of the 1876 Currency Reform Commission
Honored by Harvard's annual Bowen Prize for best student essay in Moral or Political Philosophy

Bowen Treatise on Logic

Bowen in American Philosophy

VASSAR COLLEGE 1915

JOHNS HOPKINS MATHEMATICS 1895

AMERICAN

JOURNAL OF PSYCHOLOGY

1889

ON SOME CHARACTERISTICS OF SYMBOLIC LOGIC.

CHRISTINE LADD FRANKLIN.

STUDIES IN LOGIC.

BY MEMBERS

OF THE

JOHNS HOPKINS UNIVERSITY.

BOSTON:

LITTLE, BROWN, AND COMPANY.

1883.
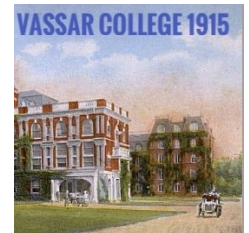
In everyday life, we have constant occasion for seeing
(and we have no difficulty in seeing) the exact equivalence
of two such statements as these :
" All students of chemistry are also students of either biology or physics."
" Students of chemistry who do not study physics all study biology."
And yet this is an inference
which ordinary **logic** takes absolutely no account of.
What it amounts to is the changing of a positive disjunctive term
in the predicate into a negative conjunctive term in the subject.
It is a very simple step for the human mind to take,
and yet it is the starting point of the immense command
over intricate reasoning which is furnished
by the modern developments of Deductive **logic**.
The secret of the great command which Symbolic **logic** has
is wholly contained in the fruitful idea
that subject and predicate are not necessarily indivisible wholes,
but that they can be broken up
and their separate elements shifted at pleasure
from one side of the copula to the other.*
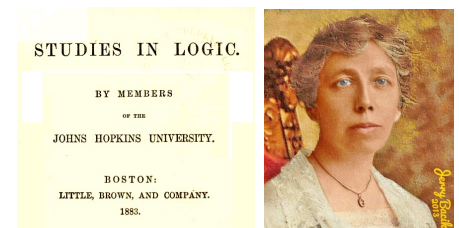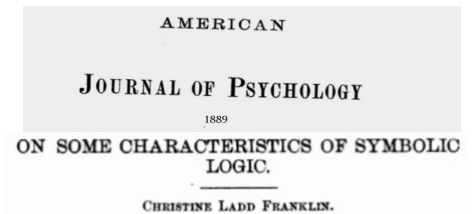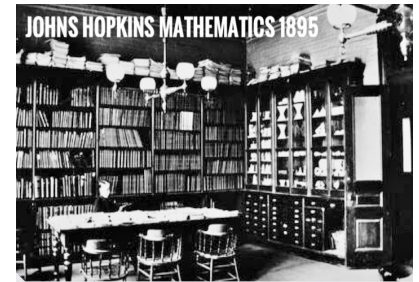
Christine Ladd Franklin

American, born Windsor, Connecticut, 1847
* "On Some Characteristics of Symbolic Logic"
"On The Algebra of Logic", "Epistemology for the Logician"
"The Reduction to Absurdity of the Ordinary Treatment of the Syllogism"
Colour and Colour Theories – a major work in the ophthalmics and optics of color in vision
Forced to teach high school math for 9 years: **"I hate it with a perfect hatred–I shall not be able to endure it."**
Vassar College, class of 1868; then "graciously" allowed to audit classes at Johns Hopkins University
Completed a dissertation under [Peirce](#) that was even published in a scholarly journal
But awarded a Ph.D. degree only 44 years later at age seventy-eight!!
Reduced Syllogistic inference to a single formula and a three stage anti-algorithm
Achievements all the more remarkable given the then anti-woman prejudice, especially in academe
Presented a trenchant expression of the Pre-Frege to post-Frege transformation in logic
Committed feminist and advocate for women in graduate school and in academic faculties ([see this letter](#))
Allowed to teach one course per semester at Johns Hopkins and Columbia with stipend but no rank
Occasionally spoke at several universities, often without pay
Never held an academic position from which to research, publish, and lecture
Associate editor of the landmark Baldwin *Dictionary of Philosophy and Psychology* (1901-5)
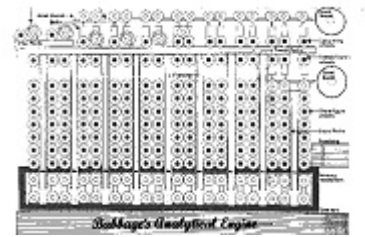Over 100 articles on logic and on color vision

http://www2.webster.edu/~woolflm/christine.html
http://vcencyclopedia.vassar.edu/alumni/christine--franklin.html
http://www.jstor.org/stable/2178062?seq=1&#mobileBookmark

Lovelace Estate, Loch Torridon, Scotland

Analytical Engine finally built
150 years after her death

SKETCH
OF THE
ANALYTICAL ENGINE
INVENTED BY
CHARLES BABBAGE, Esq.
By L. F. MENABREA,
of Turin,
OFFICER OF THE MILITARY ENGINEERS.
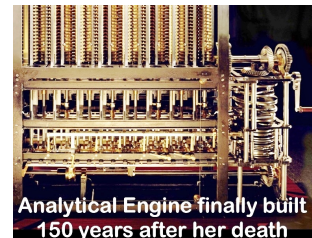WITH NOTES BY THE TRANSLATOR.
[ADA LOVELACE]

Logic has its own peculiar truth and value,
independently of the subjects
to which we may apply
its reasonings and processes.*

The Analytical Engine uses algebraic signs
according to their proper laws
and develops the **logical** consequences.*

The Analytical Engine
weaves algebraical patterns
just as the Jacquard-loom
weaves flowers and leaves.*

Augusta Ada Byron King

British, born London, 1815
*Notes in translation: Manebrea's "Sketch of the Analytical Engine Invented by Charles Babbage Esq."
Mathematician and first computer programmer
Countess of Lovelace by marriage at age 19 to William King-Noel
Collaborated with Charles Babbage who designed the first computer
Foresaw a machine to compose music, construct graphics, and conduct science
A remarkably original figure in the history of technology
Student of Augustus De Morgan
Yearned for and achieved fame in a "man's world"
Beset by drug addiction, chronic illness, infidelity, and gambling
Bore three children, but struggled with marriage and motherhood
Found in a letter to her from Babbage: ------------------------------------>
        **"Forget this world and all its troubles and if possible
        its multitudinous Charlatans--
        everything in short but the Enchantress of Numbers."**
Died at age 36, just as did her father, the poet Lord Byron
Computer language ADA named for her

http://www.well.com/~adatoole/bio.htm   FIND POSTAGE STAMP
                https://writings.stephenwolfram.com/2015/12/untangling-the-tale-of-ada-lovelace/

On the field of **logic**, people of the most opposite schools
may meet and shake hands....
Men have started from some premise, and finding it
in apparent opposition to certain recognised conclusions,
have abandoned the latter in a moment,
when the slightest consideration would have convinced them
that the rejected propositions had better claims
than that which was employed to subvert them.
To do this is much as if one were to lean against a mud bank,
in trying to throw down a stone wall.
Is not the advice to disregard consequences rather like a relic
of the sentiments engendered by the old scholastic disputes?
Those who took part in them had to start from certain premises,
which if they were not accepted irrevocably
would cause the dispute to break down.
If discussion is a merely artificial matter to be conducted
in accordance with rules,
all you can do when you trip upon a hostile fact
is to yield yourself prisoner,
but if it is a means of honestly endeavouring to elicit the truth,
the best thing to be done is to get up again
with your improved knowledge and try again.*

Logic is not concerned with what we do believe,
but what we ought to believe, if we are to believe correctly.**

Gate of Virtue   Gate of Humility

William Matthison   John Le Keux
Gonville and Caius College, Cambridge
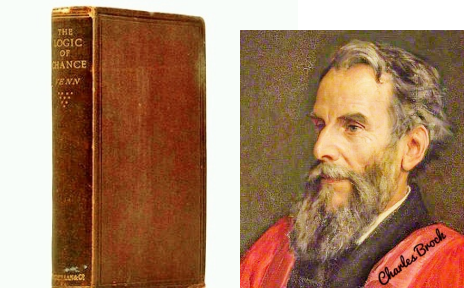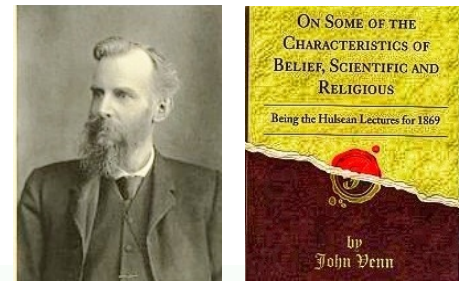
John Venn

British, born Hull, Yorkshire, 1834
*On Some of the Characteristics of Belief Scientific and Religious
**The Logic of Chance;   Symbolic Logic;   The Principles of Empirical Logic
Best remembered for Venn diagrams still used in logic and mathematics
Mathematician, ordained Anglican deacon, logician, lecturer in moral sciences
For 70 years, undergraduate and then Fellow of Gonville and Caius College, Cambridge
With his son compiled a 500 year *Biographical Notes* of over 100,000 Cambridge University alumni
In his honor and memory, a fitting stained glass window in the college chapel (FIND STAINED GLASS)
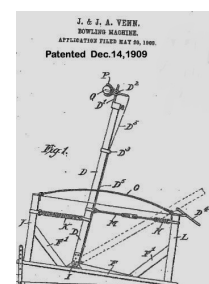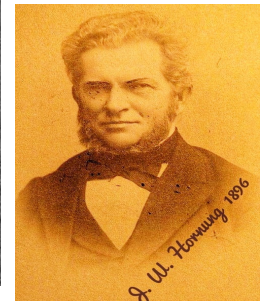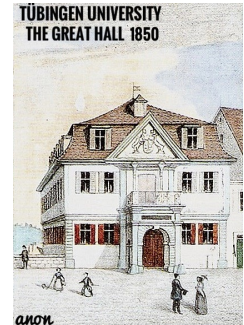Resigned the priesthood saying **"it is incompatible with philosophy"**
A skilled mountain climber and keen botanist
Built a cricket machine capable of clean bowling top batsmen----->
 (cf. Bernard Bosanquet's nephew)

http://www.informationphilosopher.com/solutions/philosophers/venn/

If we consider the nature of our Thought,
we find that an important part of it
is engaged in the attempt to arrive at propositions
which are certain and universally valid,
but that it frequently fails to do this
when left to its natural development.
Hence arises the problem of ascertaining
the conditions under which this object
can be attained, and of determining
in accordance with those conditions
the rules to be followed in its attainment.
The solution of this problem would place us
in possession of a technical science of thought,
directing us how to arrive
at certain and universally valid propositions.
Such a science we call **logic**.*

Christoph von Sigwart

German, born Tübingen, Württemberg, 1830
Logic   (English translation by Helen Dendy, wife of Bernard Bosanquet)
Philosopher, logician, and theologian
Held (mistakenly, as many then did) that logic is both given and grounded in psychology
Still, in its time, a comprehensive handling of all aspects of logic
Logic textbook highly regarded and widely used in Great Britain and the United States
Student and later Professor at Tübingen University

http://books.google.com/books?id=ThlVAAAAMAAJ&printsec=frontcover&dq=inauthor:sigwart&hl=en&ei=3PqWTYv3
EJT2gAfqqbjQCA&sa=X&oi=book_result&ct=result&resnum=1&ved=0CC8Q6AEwAA#v=onepage&q&f=false

Karlsruhe Technische Hochschule 1895
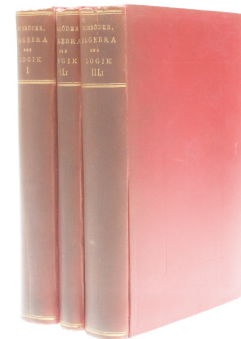
Getting a handle
on the consequences of any premises
seems to me to be the noblest,
if not the ultimate goal of **logic**.*

Karlsruhe c. 1885

KARLSRUHE 1901

Ernst Schröder

German, born Mannheim, Baden, 1841
The Algebra of Logic (two thousand pages in three volumes)
Amazing accomplishments in logic, technology, and mathematics
With Charles S. Peirce reinterpreted the thesis that logic is the basis of mathematics
An avid sportsman: cycling, hiking, swimming, ice-skating, horseback riding
Worked mainly in gymnasiums and technical schools
Thus largely unrecognized within the university establishment
Pedaling around town and campus, became known as the "Bicycle-Professor"
Took up skiing at age 60 only to catch cold and die of brain-fever

I define **logic** as the science of determining the conditions
which enable symbols in general to refer to objects.*

Logic has been essentially the science of the structure of arguments,
whereby we can distinguish good arguments from bad ones,
can estimate the value of an argument,
can determine upon what conditions it is valid,
how it needs to be modified, and what can be inferred
from a given state of facts.**

The difficulty of showing
how the law of deductive reasoning is true
depends upon our inability
to conceive of its not being true.***

The truth is, that common-sense,
or thought as it first emerges
above the level of the narrowly practical,
is deeply imbued with that bad logical quality
to which the epithet metaphysical is commonly applied;
and nothing can clear it up but a severe course of **logic**.****
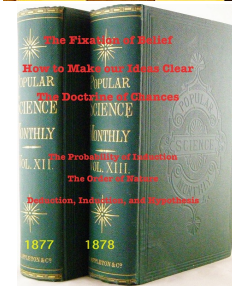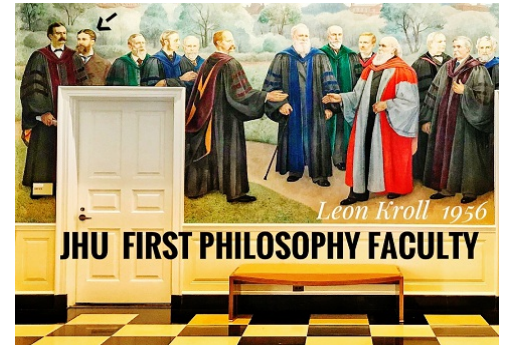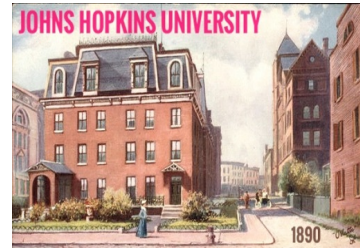
Charles Sanders Peirce

American, born Cambridge, Massachusetts, 1839
* "What Is Logic?" Harvard Logic Lecture #1
** "A Practical Treatise on Logic and Methodology"
"Questions Concerning Certain Faculties Claimed For Man"
*** "Some Consequences of Four Incapacities"
**** "The Fixation of Belief" (among articles in *Popular Science Monthly* magazine.....above)
Perhaps the greatest intellect born in the United States of America
Harvard B.A. and M.A. in chemistry, not philosophy nor mathematics
Thirty-two years researcher at Coast and Geodetic Survey
Philosopher, logician, mathematician, scientist (in ten areas), inventor, psychologist,
    historian, economist, critic, playwright, stage performer, fiction author
Founded Pragmatism, developed it extensively and persuasively
Argued that meaning, in any form, is defined in term of practical consequences
Led and prominent in the Metaphysical Club (see link below)
Lectured for five years at Johns Hopkins University (above)–his only academic position
Dissertation director for [Christine Ladd](#)
Petty scandals and clashes excluded him from academe
Supported anonymously by [William James](#) and [Victoria Lady Welby](#)

[Tribute by his student Christine Ladd Franklin](#)   [The Metaphysical Club](#)

When, after observing that gold, silver, lead, and other metals,
are capable of being reduced to a liquid state by the application of heat,
the mind leaps to the conclusion that the same will hold true
of some other metal, as platinum, or of all metals,
we have then an inductive inference, in which the conclusion,
or consequent, is a new proposition, which was not contained
in those that went before. We are led to this conclusion,
not by reason, but by an instinct
which teaches us to expect like results, under like circumstances.
Experience can tell us only of the past;
but we allow it to affect our notions of the future
through a blind belief that the thing that hath been,
it is that which shall be; and that which is done is that which shall be done;
and there is no new thing under the sun.
Take away this conviction, and the bridge is cut
which connects the known with the unknown, the past with the future.
The commonest acts of daily life would fail to be performed
were it not for this assumption, which is itself no product of the reason.
Thus man's intellect, like his faculties generally, rests upon a basis of instinct.
He walks by faith, not by sight.
It is a mistake to talk of inductive reasoning
as though it were a distinct species from deductive.
The fact is that inductive inferences are either wholly instinctive,
and so unsusceptible of **logical** vindication,
or else they may be exhibited under the form of deductive inferences.
We cannot be justified in inferring that platinum will be melted by heat,
except where we have equal reason for asserting
the same thing of copper or any other metal.
In fact we are justified in drawing an individual inference
only when we can lay down the universal proposition
"Every metal can be melted by heat".
But the moment this universal proposition is stated,
the truth of the proposition in the individual instance
flows from it by way of deductive inference.
Take away the universal, and we have no **logical** warrant
for arguing from one individual case to another.
We do so, as was said before, only in virtue of that vague instinct
which leads us to anticipate like results from like appearances.*
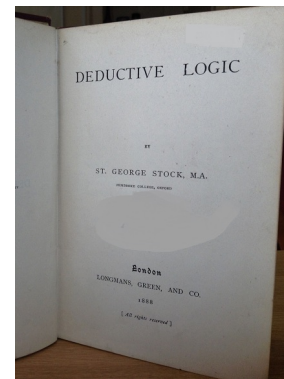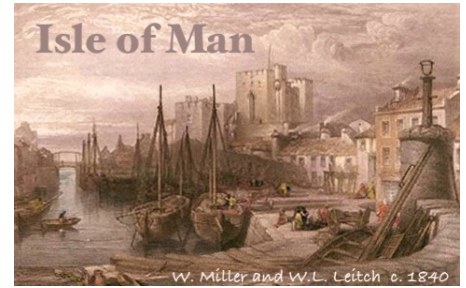
St. George Stock

British, born Douglas, Isle of Man, 1850
"St. George" a given name to evoke protection by the Patron Saint of England
*Deductive Logic
Attempts At Truth, Lectures in the Lyceum or Aristotle's Ethics for English Readers
Selections From The Septuagint: According To The Text Of Swete
Resident scholar (Philosophy and Classics), Pembroke College, Oxford; Lecturer in Greek, University of Burmingham
Several articles for the 1911 Encyclopedia Britannica
Viewed Stoicism simply as the ethics of Socrates+Plato+Aristotle+Heraclitus
Focused on the Hebraic, Semitic, and classical Greek basis of the New Testament
Sought harmony of the outer world that is and inner search for what can be
Author (with Algernon Swinburne) of the outrageous Whippingham Papers

https://archive.org/details/deductivelogic00stocuoft

The child is incapable of **logic**
in a consciously analytical sense;
but once started,
his "thoughts" arrange themselves
in normal sequence.*

There are many obstacles
to block the path
of mental advance....
To rightly correct these
add some training
in at least elementary **logic**.**
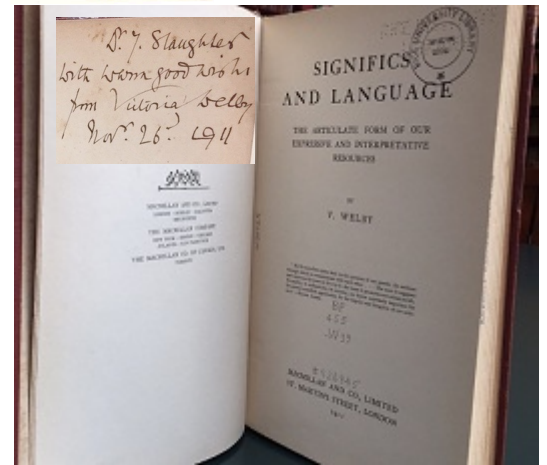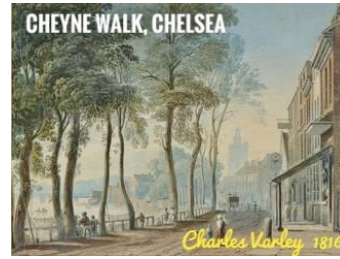
Victoria Lady Welby

British, born Chelsea, London, 1837
Significs and Language
**What Is Meaning? Studies in the Development of Significance*
Time as Derivative, Sense, Meaning, and Interpretation
Virtually self-educated
Pioneering and still well-regarded work in semiotics
Significant correspondence with notable scholars such as Charles Sanders Peirce
Published in leading journals
Accomplished musician, painter, poet, and playwright
Founded the Royal School of Needlework and Sociological Society of Great Britain
Maid of Honor to her godmother– Queen Victoria

But what is the meaning of formal **logic**?
It is that part of **logic**
which deals with the forms according to which
all correct thought proceeds with the laws
which regulate thought,
the universal and irrefragable rules
which must govern every act of thinking,
if it is to be correct.
It is the business of formal **logic** to enforce their
observance on every thinker
and to allow no sort of deviation,
even by a single hair's-breadth from their enactments.
It has to proclaim these laws
eternal and immutable as God Himself,
and to pronounce its anathema on all who declare
that they admit of any exception
under any circumstances whatever.
From the beginning to the end of time,
nay before Time was and after Time shall be no more,
in any conceivable world
which God has created or could create,
these laws are unchangeable and inviolable,
and God Himself cannot interfere with them
in their very smallest detail.
For they are the foundation of all Truth
and are themselves founded
upon the nature of the God of Truth.
God could not violate them without ceasing to be God,
and man cannot violate them
without violating that rational nature
which he possesses in virtue of
his creation in the likeness of God.*
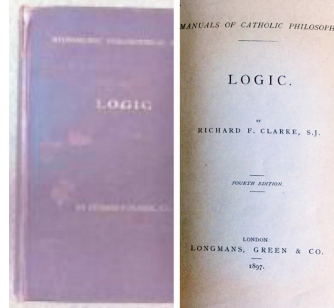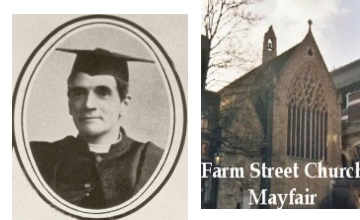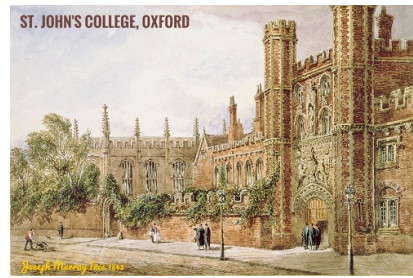
British, born Islington, Middlesex, 1845   Richard Frederick Clarke S.J.
Logic   (well received school handbook)
The Existence of God: A Dialogue in Three Chapters; The Adorable Heart of Jesus
University Education in Ireland: A Retrospect and a Prospect
Expounded a vigorous analysis and defense of the Principles of Contradiction and Identity
Graduate, Fellow of, and highly sought after tutor, St John's College, Oxford University
Anglican priest, converted to Catholicism, ordained Jesuit priest at age 39
Recognized leadership in the pioneering Farm Street Church, Mayfair
Strove to make Catholic teachings understandable by the average minimally schooled faithful
Editor of **The Month**, the magazine for Catholic news, culture, and events
Led the [Stonyhurst Philosophy Publication](#) series
Authored dozens of Catholic Truth Society manuals, a million copies sold world wide
Advocated and supported education for women, so long denied them
Founding Principal of Clarke's Hall, Oxford; later renamed Campion Hall

To enable us to deduce correct inferences
from given premises
is not the only object of **logic**.
It also has an interest of another kind,
derived from the light which it sheds
upon the essential standards
of truth and correctness –
standards not derived from without
but deeply founded
in the constitution of the human faculties.
To unfold the secret laws and relations
of those high faculties of thought by which all
beyond the merely perceptive knowledge
of the world and of ourselves
is attained or matured
is an object which does not stand in need
of commendation to a rational mind.*§
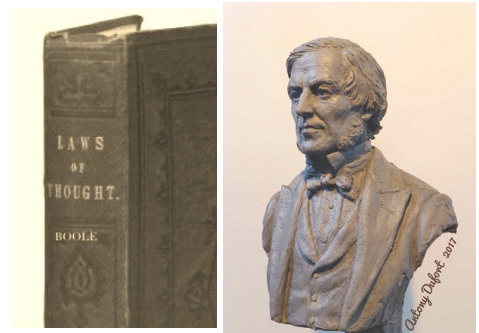
George Boole

British, born Lincoln, Lincolnshire, 1815
*An Investigation of the Laws of Thought
Mathematical Analysis of Logic
Had minimal formal education, so studied and worked privately
Opened his own school in Lincoln
At age 34, appointed lecturer, Queen's College, Cork, Ireland
Enlarged logic to embrace probability, as well as necessity
Developed "Boolean Algebra" based on a yes/no, on/off, one/zero logical model
Achievements are still the basis of the architecture in **all** digital science and technology
Died at age 49 of pneumonia after walking to class in the rain and lecturing soaking wet
Contemporary Augustus De Morgan wrote, prophetically:

> **"Boole's system of logic...excited admiration from its first appearance. That the symbolic processes of algebra, invented as tools of numerical calculation, should be competent to express every act of thought, and to furnish the grammar and dictionary of an all-containing system of logic, would not have been believed until it was proved....The unity of the forms of thought in all the applications of reason, however remotely separated, will one day be matter of notoriety and common wonder; and Boole's name will be remembered in connection with one of the most important steps towards the attainment of this knowledge."**

§ quotation somewhat but harmlessly condensed

http://archive.org/stream/aninvestigationo15114gut/15114-pdf#page/n1/mode/2up

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Logic proper begins at the point
where we introduce into our reasoning
considerations derived from
an order of thought higher than that
whose relations we are investigating.*

Do not deceive yourself,
because deceiving yourself
distorts your brain and ruins the possibility
of using **logical** methods skillfully
to arrive at the knowledge of truths.**

For learning the art
of the orderly arrangement of thought,
no previous knowledge is necessary
of **logic** or of any science whatsoever.
What is necessary
is a willingness not to resist.***

MARY AND GEORGE

Queen's College, London
Library 1906

LOGIC
TAUGHT
BY
LOVE
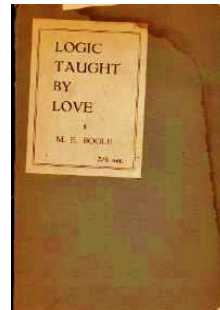
Mary Everest Boole

British, born Wickwar, Gloucestershire, 1832
Logic Taught By Love
**Philosophy and Fun Of Algebra*
***The Forging Of Passion Into Power, The Preparation Of The Child For Science*
Symbolical Methods Of Study, Lectures on Logic and Arithmetic
Highly accomplished and mainly self-taught mathematician
Married George Boole, who died at 49, leaving her with five young daughters
Moved to London and was librarian at the new Queen's College for women (above)
Praised for teaching excellence by the London Board of Education
Collaborated with Victoria Lady Welby on the semiotics of the learning process
Was convinced that logic and mathematics reveal deeper spiritual and philosophical truths
Mount Everest named for her uncle George, Surveyor General of India

http://books.google.com/books?id=1akAAAAAYAAJ&printsec=frontcover#v=onepage&q&f=false
http://www.youtube.com/watch?v=_hMumdRMzNA

We are not sure
of the **logical** soundness
of our methods and results
until we make everything about them
quite definite.*
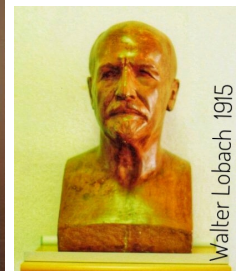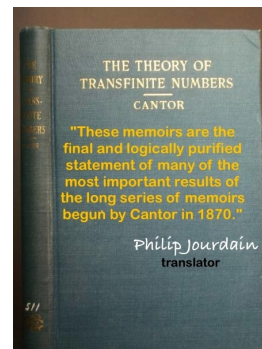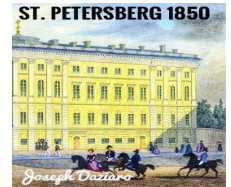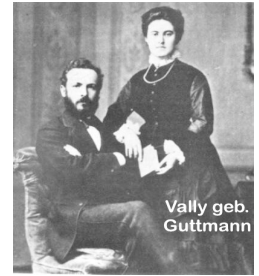
Georg Cantor

German; born Saint Petersburg, Russia, 1845
Foundations of a General Theory of Aggregates
Contributions to the Founding of the Theory of Transfinite Numbers
Professor at University of Halle, Wittenberg
Regarded as one of the greatest of all mathematicians
Almost singlehandedly created set theory and transfinite mathematics
Argued that for every infinite set, there is a larger one, thus infinitely many infinite sets!
Believed the theory of transfinite numbers had been communicated to him by God
Published attempts to show that Francis Bacon wrote all of Shakespeare
Argued that transfinite numbers and multiple infinities disprove fatalism and materialism
Beset by academic, theological, and social criticism, appealed to Pope Leo XIII:
> **"Transfinite numbers are of the intentions of the Creator
> and His absolute boundless will."**

Early, a talented and promising violinist
Lunar crater named for him

http://www.math.vanderbilt.edu/~schectex/courses/infinity.pdf
http://nautil.us/issue/2/uncertainty/the-deepest-uncertainty
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Symbolic **logic** is usually thought to be
a hard and abstruse subject.
But my symbolic system is, on the contrary, so simple
that an ordinary schoolboy of ten or twelve
can in a very short time master its fundamental conceptions
and learn to apply its rules and formulae to practical problems.
Propositions are the real units of all reasoning,
provided they convey the meanings intended.
The words chosen and their arrangement matter little.
Every intelligible argument, however complex,
is built up of individual propositions;
and whenever a simple elementary symbol,
such as a letter of the alphabet,
is sufficient to indicate or represent any proposition, it will be
a great saving of time, space, and brain labour thus to represent it.*

Other logicians generally divide **logic** into two parts:
the **logic** of *class inclusion* and the **logic** of *propositions.*
Mine is *one simple homogeneous system* which comprises
all the valid formulae of their systems,
as well as many other formulae
which their systems cannot even express.**
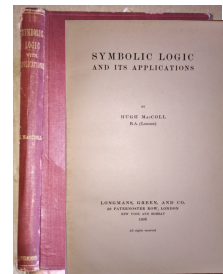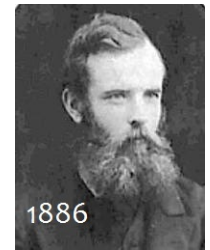
Hugh MacColl

British, born Strontian, Argyllshire, Scotland 1837
**Symbolic Logic and its Applications*
****Mind** #12 new series (one of several papers in **Mind**)
More seminal papers in other notable journals
Man's Origin, Destiny and Duty (argues that logic by its very existence, reveals divinity)
Mr. Stranger's Sealed Packet (an early science fiction classic about a journey to the planet Mars)
Knew only Gaelic until teenage
Urged to take Anglican Orders (in return for tuition at Oxford) by William Gladstone, but declined
At age 28 moved to Boulogne-Sur-Mer, France, permanently.
Soon thereafter earning his B.A. via the University of London's new Extension Degree program
Formalized propositional logic several years before Frege's *Begriffsschrift*e
Lively exchanges with Peirce, Boole, Jevons, Schröder, Russell, Couturat, and Peano
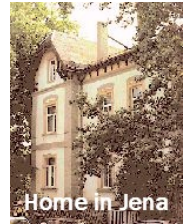Decades later, credited for original work in modal logic by C. I. Lewis

> **"Nothing is stranger in the recent history of Logic in England,
> than the non-recognition which has befallen the writings of this author."**........ Christine Ladd Franklin
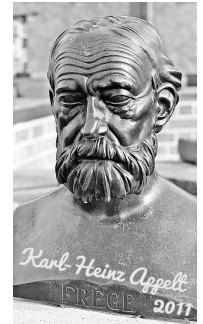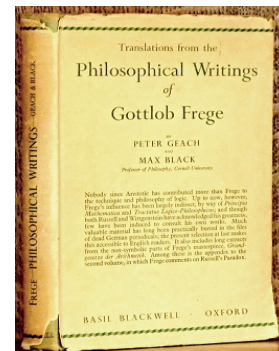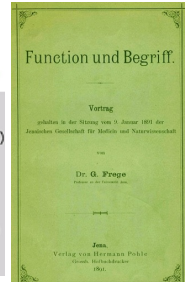
https://archive.org/details/mindreview05edinuoft

http://www.hf.uio.no/ifikk/forskning/publikasjoner/tidsskrifter/njpl/vol3no1/vol3no1.pdf

JENA 1874
Ernst Haeckel

Home in Jena

JENA 1919

Revolutionary "Concept Script"

Function und Begriff.

What really pertains to **logic**
lies not in truth,
but in the asserting force
by which truth is spoken.*

The laws of **logic**
are the most general laws,
which prescribe universally the way
in which one ought to think
if one is to think at all.**

Translations from the
Philosophical Writings
of
Gottlob Frege

PETER GEACH
and
MAX BLACK

Karl-Heinz Appelt
2011
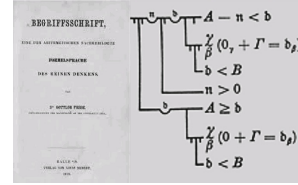
Gottlob Frege

German, born Wismar, Mecklenburg-Schwerin, 1848
*The Idea;   Concept Script
**Foundations of Arithmetic;   On Sense and Reference, Basic Laws of Arithmetic
Scholar of profound insight who revolutionized and transformed logic
Full Honorary Professor at the University of Jena
Developed predicate functions and quantification, now basic in logic
Launched the important distinction between meaning versus reference
Thus initiating the ever since focus on the Philosophy of Language
Though modest and reserved, was yet politically conservative, even xenophobic
Revered the German monarchy,   a life-long hiking enthusiast
Attributed defeat in the Great War to dreaded socialism and democracy
Vainly proud of his genius and unforgiving of non-recognition
Was certain (correctly!) of his ultimate fame
Unpublished papers lost in the carnage of war, 20 years after his death
Admittedly standoffish to both students and colleagues

http://www.ocf.berkeley.edu/~brianwc/frege/

Logic is the science of valid argumentation. ....
When I say, "This table is black," I am speaking of the table;
I have seen it black, and my judgment expresses what I have seen.
But if I say, "This table is not white,"
I surely do not express something I have perceived,
for I have seen black, and not an absence of white.
It is therefore, at bottom, not on the table itself that I bring this judgment to bear,
but rather on the judgment that would declare the table white.
I judge a judgment and not the table.............
How comes it, then that affirmation and negation
are so persistently put on the same level and endowed with an equal objectivity?
How comes it that we have so much difficulty
in recognizing that negation is subjective,
artificially cut short, relative to the human mind and still more to the social life?
The reason is, no doubt, that both negation and affirmation
are expressed in propositions,
and that any proposition, being formed of words,
which symbolize concepts is something relative
to social life and to the human intellect.
Whether I say "The ground is damp" or "The ground is not damp,"
in both cases the terms 'ground' and 'damp'are concepts
more or less artificially created by the mind of man—
extracted, by his free initiative, from the continuity of experience.
In both cases the concepts are represented by the same conventional words.
In both cases we can say indeed that the proposition aims
at a social and pedagogical end, since the first would propagate a truth
as the second would prevent an error.
From this point of view, which is that of formal **logic**,
to affirm and to deny are indeed two mutually symmetrical acts,
of which the first establishes a relation of agreement
and the second a relation of disagreement between a subject and an attribute.
But how do we fail to see that the symmetry
is altogether external and the likeness superficial?*[§]

§

 L. E. J. Brouwer espouses a revised formal logic somewhat based with these ideas
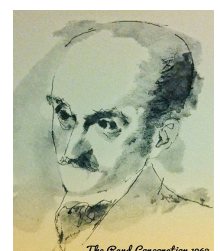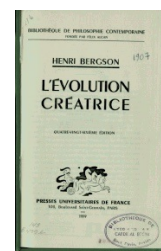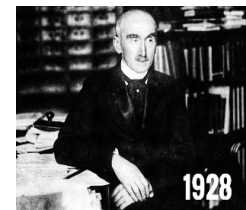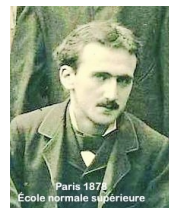
Henri Bergson

French, born Paris,1859
Creative Evolution   (1927 Nobel Prize; magnificent and groundbreaking opus for Process Philosophy)
Time and Free Will;   Matter and Memory;   The Two Sources of Morality and Religion;   Laughter
Marcel Proust – – best man at Bergson's wedding.
Collège de France--Chair of Greek and Latin Philosophy
Challenged all philosophy, including Logic, arguing that Continuity and Intuition are the bases of all experience
Lectured frequently in England, Scotland, and America
Praised by pragmatism's Charles Sanders Peirce and, exceedingly, William James
Great War emissary to President Wilson, was convinced that only with America could France be saved

http://www.informationphilosopher.com/solutions/philosophers/bergson/
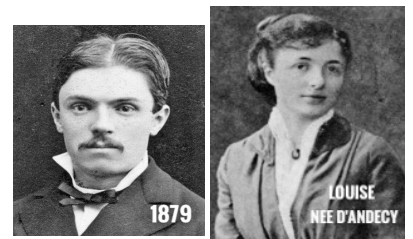
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It is by **logic** that we prove,
but it is by intuition that we discover.
....
Logic teaches us
that on such and such a road
we are sureof not meeting an obstacle;
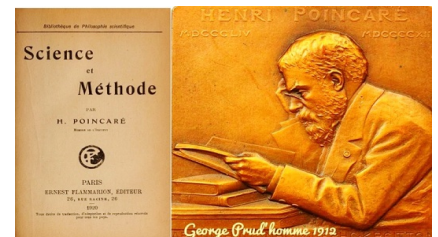it does not tell us which is the road
that leads to the desired end.
For this it is necessary
to see the end from afar,
and the faculty which teaches us to see
is intuition.*

Famous Quantum conference
Brussels, 1911

Paris, 11 rue Pierre et Marie Curie

Henri Poincaré

French, born Nancy, 1854
*Science and Method
On the Foundations of Geometry, Intuition and Logic in Mathematics
Mathematics and Logic, Science and Hypothesis, The Value of Science*
Multifaceted mathematician and scientist
Had absolute photographic memory his entire life
Was a mine inspector from age 22 until his death
University of Paris primary lecturer in mathematics and science from age 27
Could work out complete solutions without paper
Seminal works in topology, algebra, celestial mechanics, relativity, and Chaos Theory
Stressed that mathematics is not simply an extension of logic
Cousin Raymond, President of France during the Great War
Contributed much toward acquittal in the Dreyfus affair
Lunar crater named for him

https://www.usna.edu/Users/math/meh/poincare.html

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Helen nee Dendy
Renowned Social Reformer
Scholar and Poet

The work of intellectually constituting that totality
which we call the real world is the work of knowledge.
The work of analyzing the process
of this constitution or determination
is the work of **logic**, which might be described
as the self-consciousness of knowledge,
or the reflection of knowledge upon itself.
...
The relation of **logic** to truth
consists in examining the characteristics
by which the various phases
of the one intellectual function
are fitted for their place in the intellectual totality
which constitutes knowledge.*
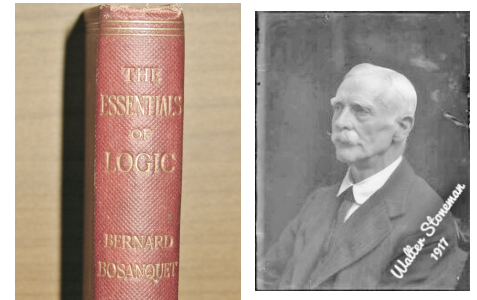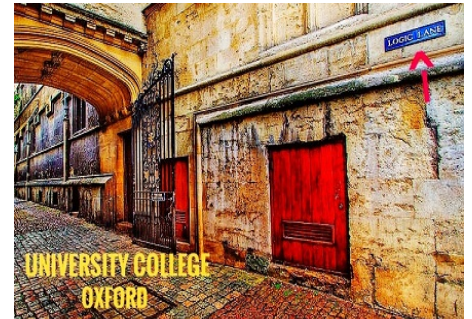
Bernard Bosanquet

British, born Alnwick, Northumberland, 1848
*Logic, or the Morphology of Knowledge;   The Essentials of Logic
A History of Aesthetic, The Philosophical Theory of the State
The Principle of Individuality and Value, The Value and Destiny of the Individual
Zoar, A book of Verse   (With wife Helen)
Prominent figure in the Philosophical Idealism movement of the time
Fellow of University College, Oxford; Chair of Philosophy, University of St. Andrews
Active in the Charity Organization Society–addressing need while demanding responsibility
Opposed state funded Old Age Pension, arguing that it subverts individual initiative
Helped organize Britain's first adult education classes
Keen botanist
Namesake nephew invented/perfected the [GOOGLY](#) ---->

   (cf. [John Venn's](#) patented invention)

   [The Essentials of Logic](#)

1896 The Eton XI at the Harrow match

Logic has in view an ideal and treats of what ought to be.
....
Logic has thus a unique character of its own
and is not a mere branch of psychology.
Psychology is concerned with the origin of our beliefs,
logic with their validity.

....
Wherein then consists the utility of **logic**?
Its study is of value simply that by its aid we advance
in the knowledge of ourselves and of our capacities.
The study of **logic** cultivates
the power of abstract thought
and affords a unique mental training.*
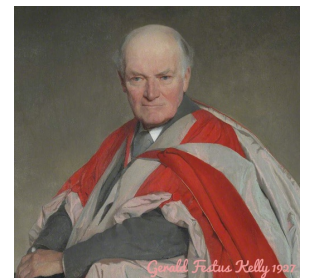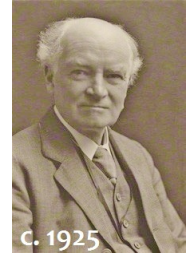
John Neville Keynes

British, born Salisbury, 1852
Studies and Exercises in Formal Logic
The Scope and Method of Political Economy
 Fellow (logic and economics) of Pembroke College, Cambridge
Leader in revision of university level educational program
Championed the first women's college–Girton, Canbridge   (Constance Jones)
Stressed that logic is not an empirical science
Strove to synthesize deductive and inductive approaches to economics
Focused on what economy should be, not simply what it is
Wife Florence, a noted social reformer, elected Mayor of Cambridge in 1932
Both he and she lived to age 97
Son John Maynard also an economist of note
Both father and son tournament level chess

http://www.archive.org/details/studiesandexerci029427mbp

http://www.ampltd.co.uk/digital_guides/economists_papers_series_two_john_neville_keynes/editorial-introduction.aspx

The algebra of **logic** itself
arises out of pure **logic** considered
as a particular mathematical theory,
for it rests on principles
which have been implicitly postulated
and which are not susceptible
of algebraic nor symbolic expression because
they are the foundation of all symbolism
and of all the **logical** calculus.*
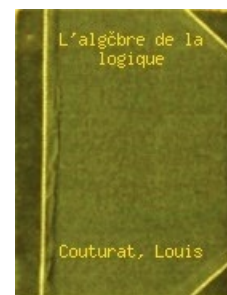
Louis Couturat

French, born Ris-Orangis, Essonne, 1868
The Algebra of Logic (the classic introduction) §
The Logic Of Leibniz (enshrining Leibniz as the then greatest logician since Aristotle)
History of the Universal Language, Foundations of Arithmetic
The Principles of Mathematics
Foresaw a future when Aristotelean logic would expanded in line with modern science
Rejected any argument that reduces logic to psychology
Having private means, preferred independent study and research
Brief professorships at universities in Caen, Toulouse, and Paris
Created, published, and worked hard for the universal language Ido
A confirmed pacifist, was killed on the first day of the Great War when his car was struck
                 by another carrying orders for the mobilization of the French Army

§ The "Preface" by Philip Jourdain contains this half-hearted appraisal of Couturat's opus:

> "**Logic has now so *thriven* upon symbols, so grown and altered that many old-fashioned logicians do not recognize it. Alas, this metaphor is not quite correct: logic has neither grown nor altered, but we now see more *of* it and more *into* it.....The new Symbolic logic is, in essentials, the logic of Aristotle, given new life and power being dressed up in the wonderful almost magical armoor and accouterments of Algebra.**"

http://www-groups.dcs.st-and.ac.uk/~history/Printonly/Couturat.html

Logic, logic! **Logic** makes us derive conclusions
from established principles, from data, from premises,
but it does not give us new data nor new first principles.
To ask for **logic** is to ask that we not go beyond
the principles furnished by reason.
And why should I be a slave to these?*
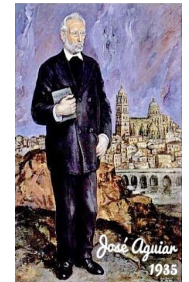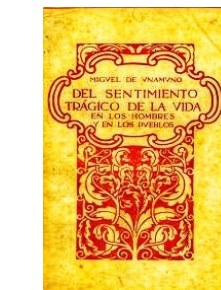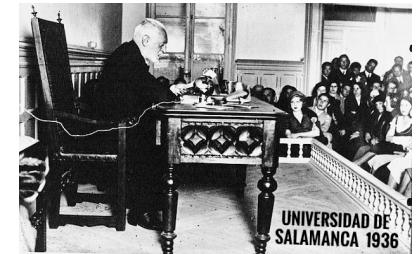
All the labored arguments in support of our hunger for immortality,
which pretend to be grounded on reason or **logic**,
are merely advocacy and sophistry.
The property and characteristic of advocacy is, in effect,
to make use of **logic** in the interests of a thesis that is to be defended,
while, on the other hand, the strictly scientific method
proceeds from the facts, the data, presented to us by reality,
in order that it may arrive, or not arrive, as the case may be,
at a certain conclusion.
What is important is to define the problem clearly, whence it follows
that progress consists not seldom in undoing what has been done.
Advocacy always supposes a *petitio principii*,
and its arguments are ad *probandum*.
And theology that pretends to be rational is nothing but advocacy.**

Suggest comparing these to [William Minto](#) and [Karl Popper](#)

Miguel de Unamuno

Spanish. born Bilbao, 1864
* *Diaries*;   **The Tragic Sense of Life*
Mist and *Abel Sánchez* (novels);   *Brother Juan* (drama)
From Fuerteventura to París and *Adventures and Visions of Spain* (poems)
Philosopher, novelist, poet, playwright, social/political critic and activist
Professor of Greek and Rector at the University of Salamanca
An existentialist Catholic and strongly opposed to church dogmatism à la Kierkegaard
Very concerned with death, suffering, substance, immortality, first principles, the lot
Ousted and banished to the Canary Islands for opposing dictator Miguel de Rivera
Fully reinstated after Rivera's fall
Then under house arrest after a highly publicized confrontation with Franco's Falangists
Died in two months on New Years Eve, an enshrined and renowned figure in Spain ever since
Ten children

https://thesmartset.com/article12061301/

http://www.worldculture.org/articles/Unamuno%20Philosophy.pdf

https://m.youtube.com/watch?v=ZiDlcBPgFy8   FIND POSTAGE STAMP

Does not everyone want to know
the difference between good argument and bad?*

All knowledge is contained
in statements or ropositions.
The only method of explaining, questioning, justifying,
or disproving any proposition
is by means of other propositions
having some relation to it.
Hence **logic** may be called the science
of the import and relations of propositions;
and since all Sciences are expressed in propositions,
logic is thus the Science of Sciences —
that is, the Science of a method of procedure
which applies in every department of knowledge.§
General **logic** starts from the standpoint
of ordinary thought and assumes reason in man
and trustworthiness in language.**
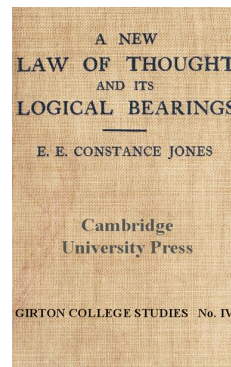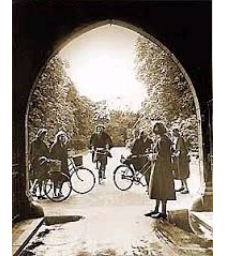
Constance Jones

British, born Llangarron, Herefordshire, 1848
As I Remember: An Autobiographical Ramble
**An Introduction to General Logic*
Elements of Logic as a Science of Propositions
A New Law of Thought and Its Logical Bearings
Student, then Lecturer, then Mistress at Girton, first women's college at Cambridge
Well recognized member of the logic elite prior to the Great War
Dec. 1,1899: first woman to deliver a paper at the Cambridge Moral Sciences Club
Anticipated major themes in Gottlob Frege, Bertrand Russell, and other logicians
Highly moved by rural church architecture

§ Echoing the 13th century's Peter of Spain   https://archive.org/details/asirememberautob00joneiala

htt://books.google.com/books?id=NQZVAAAAMAAJ&pg=PR1&dq=logic+inauthor:constance+inauthor:jones&hl=en&sa=X&ei=Gal
MT_GRC4-btweEzZwx&ved=0CEUQ6AEwAw#v=onepage&q=knowledge&f=false

READ TOMBSTONE INSCRIPTION

Logic is invincible because in order to combat **logic** it is necessary to use **logic**.*

cf. Aristotle and Epictetus
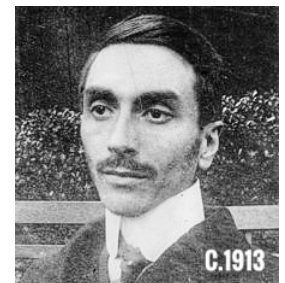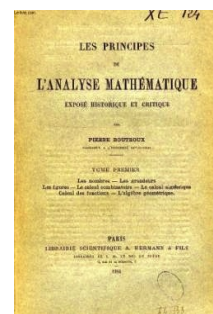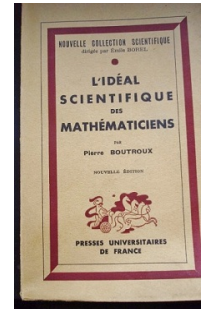
Pierre Leon Boutroux

French, born Paris, 1880
The Principles of Mathematical Analysis
Scientific Ideal of Mathematicians in Ancient and Modern Times (engrossing)
Highly respected mathematician and historian
Also a spiritual philosopher, insisting on freedom and spontaneity of the spirit
Argued that modern science requires indeterminancy
Professor at Poitiers, Princeton (before the Great War), and Collège de France
Served with distinction in the Great War
Nephew of Henri Poincaré
Productive work cut short by death aged 42

http://query.nytimes.com/mem/archive-free/pdf?_r=1&res=9800EFDF1F39E633A25757C2A9639C946596D6CF

http://www.ams.org/journals/bull/1923-29-10/S0002-9904-1923-03800-7/S0002-9904-1923-03800-7.pdf

Logic works by predicating of the single instance
what is true of all its kind.
...
Experiences might have all been singulars,
no one of them occurring twice.
In such a world **logic** would have had no application;
for kind and sameness of kind
are **logic's** only instruments.*

Logic has been defined
as the 'substitution of "similarities",
and in general one may say
the perception of likeness and unlikeness
generates the whole of "necessary" truth.
Nothing *happens* in the world of **logic**.
That is what gives **logic** its "eternal" character.**
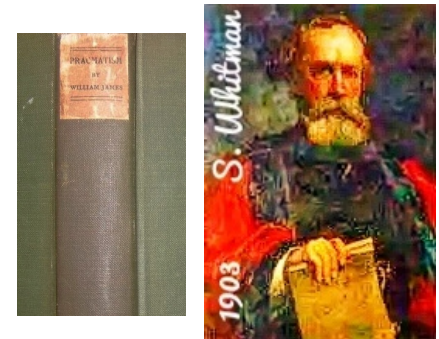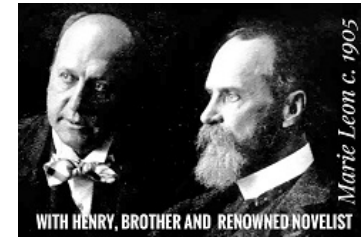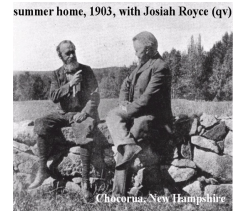
William James

American, born New York City, 1842
Pragmatism: A New Name for Some Old Ways of Thinking
**Some Problems of Philosophy*
The Principles of Psychology   (soon authoritative and still highly regarded)
The Will to Believe, The Dilemma of Determinism
Essays in Radical Empiricism   (superb)
Physician, psychologist, philosopher
When teaching logic at Harvard used Jevons' *Elementary Lessons in Logic*
Founder of Harvard's psychology department and first laboratory of experimental psychology
Then became a leading professor of philosophy
Within academe and in public, the most influential proponent of Pragmatism
Always gave due credit to Charles Sanders Peirce as the seminal developer of Pragmatism
Traveled widely; much sought-after lecturer, but relished rural New Hampshire
Brother Henry, preeminent American/British novelist
In above photograph, blurted to Royce **"Look out! Damn the Absolute"**

https://www.giffordlectures.org/lecturers/william-james

The laws of **logic**
are naturally valid rules of judging.
That is to say we are obliged
to conform to them
since conformity to these rules
ensures certainty in our judgments
whereas judgments diverging
from these rules are liable to error.
What we therefore mean
is a natural superiority
which thought processes
in conformity with law
have over such as are contrary to law.*
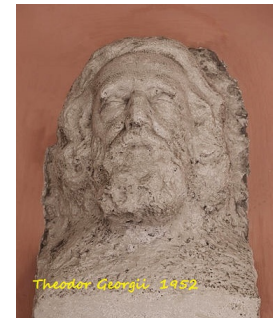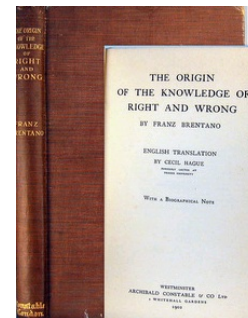
Franz Brentano

German/Austrian, born Marienberg am Rhein, 1838
*The Origin of our Knowledge of Right and Wrong
The Psychology of Aristotle, Psychology from an Empirical Standpoint
Aristotle and his World View, The Classification of Mental Phenomena*
Full Pofessor at the University of Vienna
Ordained priest but resigned fiercely denying Papal Infallibility
To marry, ceded Austrian citizenship/professorship
Totally transformed a doctrine of medieval scholasticism, calling it "intentionality"
Objects of thought being realities, but radically apart from realities in the external world
Among his students: Edmund Husserl and Alexius Meinong
Modified classical logic in line with his theory of non-objective predicates
Turmoil of the Great War finally led him to Switzerland

https://mechanism.ucsd.edu/teaching/w07/philpsych/brentanoandjames.pdf

http://www.marxists.org/reference/subject/philosophy/works/ge/brentano.htm

A FORM OF THOUGHT is
a way in which we must think
whenever we think at all.
As men all have much
the same sort of eyes or of hands,
whatever the race or business of the men,
so all have much the same sort of minds.
All men walk on two legs
and even so all men think
in a series of assertions
that are joined in some way
more or less close.
This that is common to all human thought,
this way in which we all do our thinking,
is called by a metaphor a form of thought,
logic being the science
that tells us about these forms.*
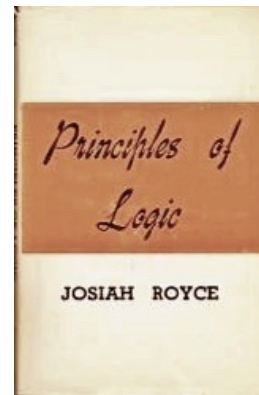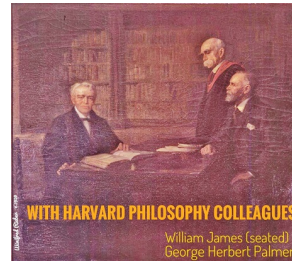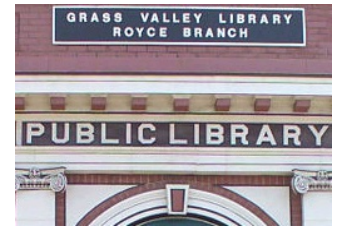
Josiah Royce

American, born Grass Valley, California, 1855
Primer of Logical Analysis
California: A Study of American Character   (first and still well regarded history of California)
The Religious Aspect of Philosophy
The Spirit of Modern Philosophy, The World and the Individual
The Feud at Exfoliate Creek   (a novel)
William James and Other Essays on the Philosophy of Life
The Problem of Christianity
Logical Essays
Lectures on Modern Idealism   (remarkably edifying)
Earned four doctoral degrees in philosophy
Arguably the finest American philosopher in the 1885-1915 era
Founded Harvard's School of Logic
Remarkably clear exposition of Immanuel Kant
Masterful synthesis of philosophy and religion
Argued that all reality is gathered in one **Absolute** mind, of which our minds are only small parts
Wanted to be a mining engineer, but turned to philosophy via Aeschylus' *Prometheus Unbound*
http://www.nasonline.org/publications/biographical-memoirs/memoir-pdfs/royce-josiah.pdf

It is only with great difficulty
that the notion of **logic** can be separated
from that of a technology [and psychology]
devoted to the advancement
of our intellectual powers.
Consequently, **logic** always remains
a "practical discipline." ....
Even if one speaks quite naturally
of inferences and syllogisms,
one means intellectual events,
or the possible results of such an events,
just as one means a physiological event
when one speaks of the circulation of the blood.*[§]

[§] Notwithstanding, Meinong develops a grand philosophy in which logic
does have an existence apart from psychology and technology.
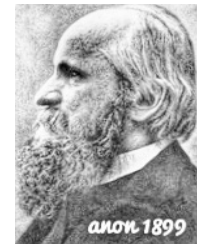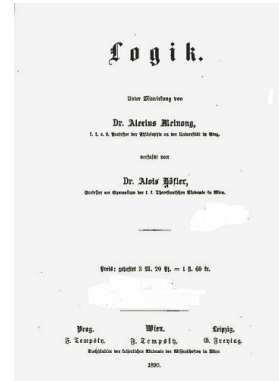
Alexius Meinong

Austrian, born, Lemberg, Galicia, 1853
*"The Theory of Objects"
On Philosophical Science and its Propaedeutics
Logic   (with Alois Hofler)
Psychological-Ethical Investigations in Value Theory
On Assumptions,   On Emotional Presentation
"On Possibility and Probability"
Early a student of [Franz Brentano](#)
Forty years professor at Universität Graz
Established the first fully functioning psychology laboratory
Almost totally blind, eschewed gatherings, conferences, public lectures
Succeeded by hard discipline and great determination
With [Edmund Husserl](#), a leading force in the Phenomenology movement
Held that psychology to be an empirical science dealing with extraordinary realities
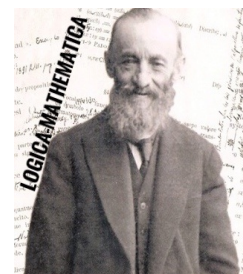Though Catholic, an intense critic of church controlled society, especially education

http://biography.yourdictionary.com/Alexis-ritter-von-handschuchsheim-Manning

http://www.jnfindlay.com/findlay/meinong/

http://lithes.uni-graz.at/handbuch/meinong_alexius.html

TURIN–PIAZZA CASTELLO E PALAZZO MADAMA 1914

Pure **logic**:
All its propositions are of the form:
'If one supposes A, then B is true.'
But these **logical** constructions
must not be made
for the mere pleasure
of reasoning about them.
The object studied by them
is given by the experimental sciences;
they must have a practical goal.*

VILLA IN CAVORETTO
CAROLA NÉE CROSIO
AND MELAMPO

WITH HIS
PUBLIC SCHOOL
MATH
TEACHERS
TURIN 1928

Formulaire de Mathématiques

PUBLIÉ PAR

G. PEANO

Professeur d'Analyse infinitésimale à l'Université de Turin

ÉDITION DE L'AN 1901
(tome III de l'édition complète)

Giuseppe Peano

Italian, born Sepinetta, 1858
Forms of Mathematics, 5 volumes
 "Review of A. Nantucci," The Concept of Number and its Extensions
A truly major figure in Mathematics and formal analysis
Professor of mathematics at the University of Turin and Military Academy in Turin
Calculus, differential equations, foundations of arithmetic, geometry, set theory, iota
Praised by [Bertrand Russell](#) for
    "extending the region of mathematical precision backwards towards regions
       which had been given over to philosophical disagreement"
Founded the Review of Mathematics, a leading international periodical
Constructed, advocated Interlingua, a neo-Latin language given to exactness and clarity
Committed to enhanced training for secondary school teachers, especially women
Purchased and then succeeded well in a printing company

Comment from his acclaimed student Alessandro Padoa:------------------>
**On the one hand, philosophers prefer to speak of logic without using it;
while on the other hand mathematicians prefer to use it without speaking of it,
and even without desiring to hear it spoken of.**

It is because of their practical effects
that the false ideals of formal **logic**
are worthy of mention.
Formalism's ideal of the motion of thought
is that it should be, not free, but compulsory........
The scientific readiness to learn from experience,
to adjust rules to cases, to modify formulas
as the facts seem to require,
and generally to handle " facts" and "laws"
with the utmost freedom,
as if they were relative to each other
and to human desires to control phenomena,
must seem utterly repulsive to formal **logic**.*

The formal **logician** can never, as such,
claim to be the final judge of the value of any argument.
He can never by his 'rules'
preclude the examination of its 'material' worth;
however formally perfect the syllogism which expresses it,
a fatal flaw may lurk in its actual application;
however grotesque its formal fallacy,
a road to truth may be barred by its rejection.**
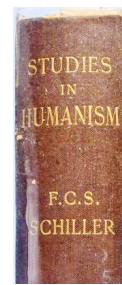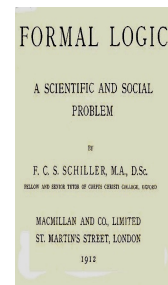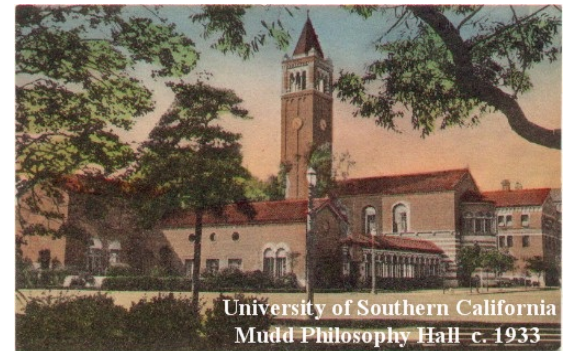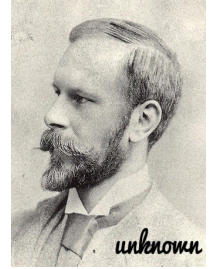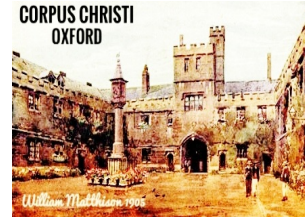
F. C. S. Schiller

Born Altona, Holstein, 1864, but never a citizen of any country; yet somehow given a British travel pass
*Formal Logic: A Scientific and Social Problem, **Studies in Humanism*
Rugby School and Balliol College, Oxford; later, Fellow of Corpus Christi College, Oxford
Still later, professor at the University of Southern California
Important contributor in Pragmatism, following [Peirce](#), [James,](#) and [Dewey](#):

> **"Human interest, then, is vital to the existence of truth; to say that a truth has consequences and that what has none is meaningless means that it has a bearing upon some human interest. Its "consequences" must be consequences to someone engaged on a real problem for some purpose." ****

Staunch detractor of formal, symbolic, and mathematical logic
Argued that they constrict inquiry and progress, that logic simply cannot be detached from content
Strongly opposed to communism, but somewhat approving of fascism
Lifelong (but skeptical) psychical researcher
Dedicated popularizer of philosophy
Supported the Eugenics Movement, writing three books on it

http://d-scholarship.pitt.edu/7625/1/mjporrovecchio_ETD_May2006.pdf

http://archive.org/details/formallogicascie00schiuoft

Logic loses its authority and becomes inept,
if it tries to disclose existences.*§

But **logic is only logic** and the systems of relation
discoverable amongst essences
do not constitute truths,
but only other more comprehensive essences,
within which the related essences figure as parts.
The systems, like the **logical** elements,
become a means of expressing truth
only when truth can be otherwise discovered
and brought face to face
with our deductive reasonings.**
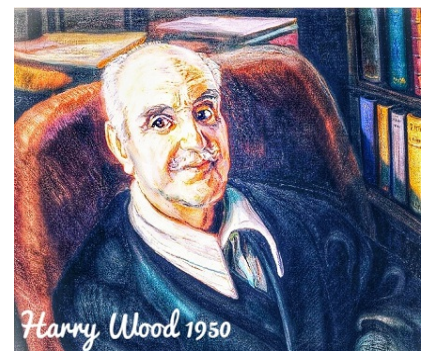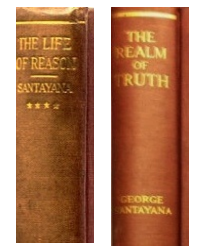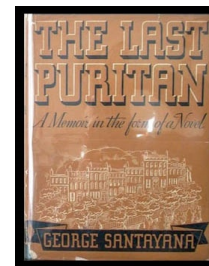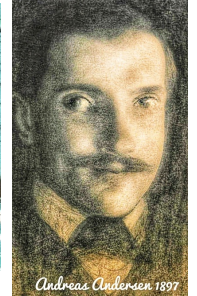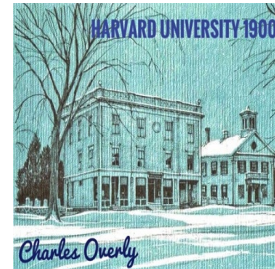
George Santayana

Spanish, born Madrid, 1862
The Life of Reason
**The Realm of Truth*
The Sense of Beauty;   Scepticism and Animal Faith   The Last Puritan   (highly successful novel)
Came to the USA at age 6, but remained Spanish citizen for life
Harvard graduate then professor, best selling novelist, poet, cultural/literary critic
A committed materialist, while never disavowing Catholicism
Argues that taste and judgment move mankind beyond ordinary experience
A social critic: **"Those who cannot remember the past are condemned to repeat it."**
Uneasy in picayune academe, retired at age 49 to live last 40 years in Europe
Against his direction, buried in Rome's notable Panteón de la Obra Pía Española

§ That is, as George Boole first pointed out, even though all unicorns are horses, it does NOT logically follow that some unicorns are horses. Be there any unicorns then they would be horses (one-horned at that), but whether unicorns do or do not exist is an factual question.

http://www.george-santayana.org
http://www.poemhunter.com/george-santayana/biography/

Logic does not enquire
into the causal origins or consequences
of intellectual activities,
but into their truth-content:
it enquires what such <u>should</u> be like,
or how they <u>should</u> proceed,
in order that the resultant judgments
<u>should</u> be true.
Correct judgments and false ones,
evident ones, and blind ones,
come and go according to natural laws,
they have causal antecedents and consequences
like all mental phenomena.
Such natural connections do not, however,
interest the **logician**;
he looks rather for ideal connections
that he does not always find realized,
in fact only exceptionally finds realized
in the actual course of thoughts.
He aims not at a physics, but at an ethics of thinking.*
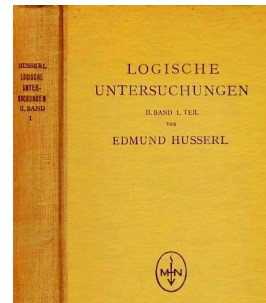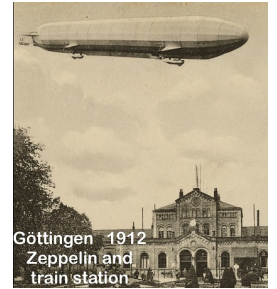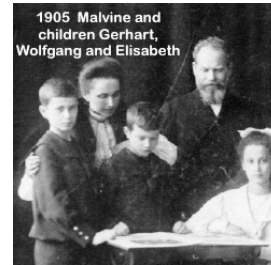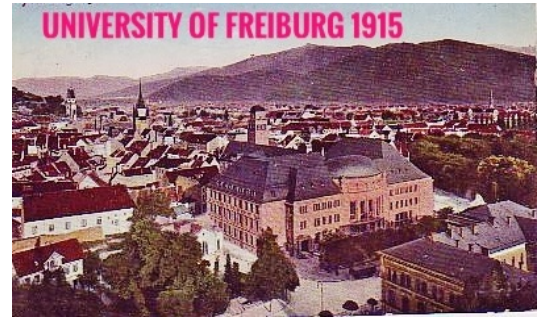
Edmund Husserl

German, born Prossnitz, Moravia, 1859
 Logical Investigations
Introduction to Logic and Theory of Knowledge
Ideas   in three groundbreaking volumes
Formal and Transcendental Logic, Cartesian Meditations
Born and raised Jewish, married a Jewish woman, both Lutheran converts at age 25
Doctorate in mathematics at the University of Vienna
Student of and much influenced b [Franz Brentano](#)
Founder of and primary expositor of Phenomenology
Sought a non-speculative, non-spiritual, non-metaphysical understanding of experience
Honored professor at Göttingen and Freiburg universities
Under Naziism, ostracized from academe due to his Jewish heritage
Refused California professorship, staying in Nazi Germany for the sake of a friend
Died one year before the start of the war
Collected manuscripts fill 40,000 pages
"**Sein leben und sein sterben war stilles heldentum.**"........................... Frau Malvine geb Steinschneider

http://www.marxists.org/reference/subject/philosophy/works/ge/husserl2.htm

http://archive.org/details/IdeasPartI

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The purpose of symbolic language
is to achieve in **logic**
an exact scientific treatment
of its subject matter
free from the ambiguities
so common in ordinary language.
The transition from statements
to their consequences,
as occurs in
the drawing of conclusions,
is analyzed into primitive elements
and appears
in a formal transformation
of the initial formulas in
accordance with certain rules.*
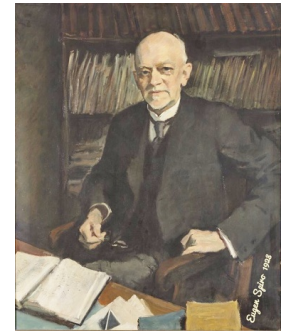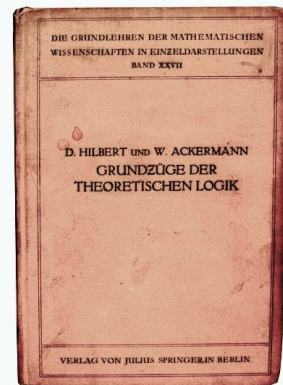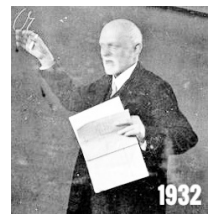
David Hilbert

Prussia (German Empire), born Königsberg or Wehlau, 1862
Principles of Mathematical Logic, with his student Wilhelm Ackermann
"Logic and the Knowledge of Nature"
Logical Foundations of Mathematics, with his major collaborator Paul Bernays ------------>
"Geometry and the Imagination";   "On the infinite"
Acclaimed (save Poincaré, Russell, Gödel) the greatest logician/mathematician of the time
In 1900, set forth 23 "Problems" (some still unsolved) that continue to enthral mathematicians
Leading figure in the prominence of Göttingen University
Insisted on the possibility of an algorithm that can decide the truth or falsity of **any** statement in **all** of logic
          But eventually Gödel, Church, and Turing proved that such an algorithm is impossible!
Most colleagues lost in the Nazi Holocaust, isolated in Germany, his 1943 burial largely neglected
On gravestone, his famous dictum–**"We must know, we will know"**
Lunar crater named for him
                    In Memorium by Hermann Weyl
http://www.ams.org/journals/bull/1944-50-09/S0002-9904-1944-08178-0/S0002-9904-1944-08178-0.pdf

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To charge the fundamental
principles of **logic**
with being mere truisms
is not to condemn them,
but to admit
that they are fitted to
fulfil the function
for which they are intended.
.... It is an actual fact
that by means of truisms
and truisms alone
we can demonstrate truths
which are not truisms.*
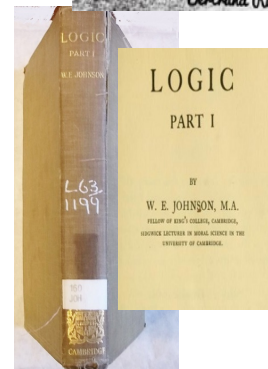
William Ernest Johnson

British, born Cambridge, 1858
*Logic
"The Logical Calculus", "The Pure Theory of Utility Curves"
"On the Theory of Logical Equations", "Analysis of Thinking"
Entire life at Cambridge: school, then student, Fellow of King's College Cambridge
Developed basic concepts later espoused by more famous mathematicians and economists
Frail, shy, but enjoyed playing piano at gatherings in his rooms

http://archive.org/details/logic01john

It is impossible that there should be
fixed models for reasoning;
you can not draw out
exhaustive schemata of valid inference.
The attempt to manufacture them
would lead to the search
for a completed infinity.
[But] if a schema will prove
a false conclusion
from premises which are true,
then that schema must be **logically** vicious,
and its Canon, which serves as a test,
must be false.*
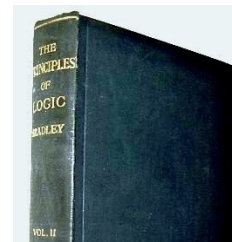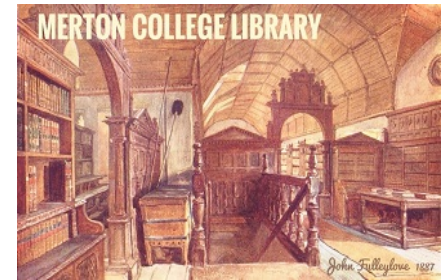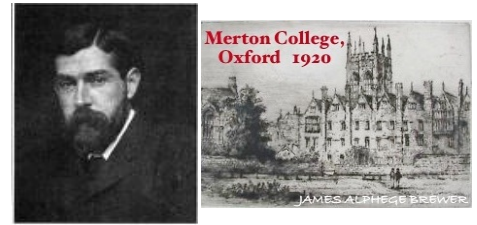
Francis Herbert Bradley

British, born Clapham, Surrey, 1846
*The Principles of Logic
Ethical Studies, Appearance and Reality*
Fellow for 54 years of Merton College, Oxford
Acclaimed then and still as the foremost British philosopher of his generation
Propounded that everything real is rational and vice versa.
Argued strongly against hedonism and utilitarianism
Highly reclusive and never married
First ever philosopher appointed to the Order of Merit ([see more here](#))
Strong influence on T. S. Eliot
Occasionally spent the night out on the college grounds shooting cats

http://www.archive.org/details/principlesoflogi013753mbp

It is impossible to deal with **logical** questions
save in connection with
definite metaphysical and epistemological principles.
Logic, as the theory of the mind's rational processes
in regard of their validity, must necessarily be part
of a larger philosophical system.
Indeed when this is not the case
it becomes a mere collection of technical rules
possessed of little importance and of less interest.
....
Formal **logic** considers the mental processes
in entire abstraction from
the relation which the concept bears to the real order.
And Symbolic **logic** is a further development of it.
However, it is difficult to see
that Symbolic **logic** can lead to anything.
The root of the evil lies
in the confusion on the part of many men of great ability
as to the true character of **logic**.*[§]
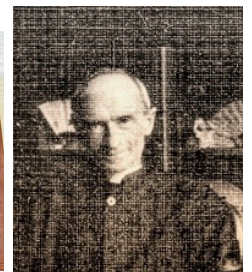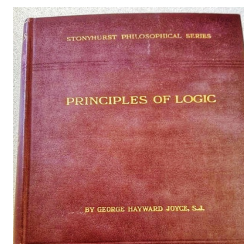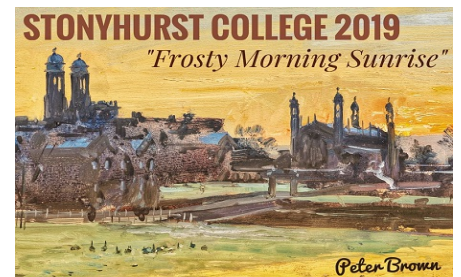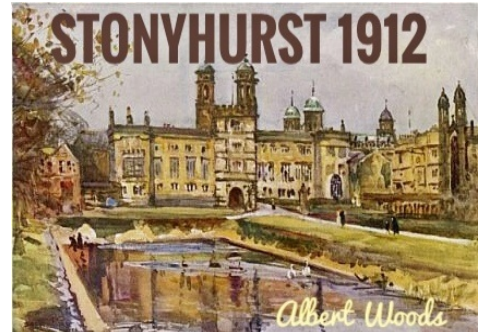
George Hayward Joyce, S.J.

British, born Harrow-on-the-Hill, 1864
Principles of Logic
Principles of Natural Theology
Ordained Anglican deacon, then entered the Catholic church becoming an ordained priest
Awarded Classical Scholarship at Oriel College, Oxford
Professor of Logic/Epistemology at Stonyhurst College; Dean of Theology at Heythrop College, London
A truly masterful neo-scholastic presentation of the science of logic
Well executed in contemporary language and devoid of medieval verbiage
Yet both an ill-informed and ill-considered rejection and denial of the Frege/Russell upheaval in logic
Served summers at Farm Street Church in Mayfair (see [Richard Frederick Clarke](#))

[§] An interesting near parallel to Philip Jourdain's comment regarding [Louis Couturat](#)

https://archive.org/details/principleslogic00joycuoft

https://archive.org/details/principlesofnatu00joycuoft

If **logic** is a science, it must have a subject of its own,
in which it seeks for principles and laws.
That subject is thought, the most general forms of which
exist diversely modified in thinking about different subjects.
But although the forms of our thought cannot be studied
apart from the differences connected with
the particular sort of subject about which we may think,
yet **logic** is not interested in these differences
for their own sake, but only for the sake
of the divers forms of thinking involved in them;
and so far as the same form is exemplified
over and over again in different particular 'bits' of thinking,
the study of the common form alone belongs to **logic**.§
....
It is not the business of **logic** to make men rational,
but rather to teach them
in what their being rational consists.
And this they could never learn,
if they were not rational first.*
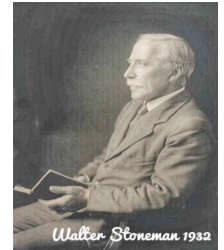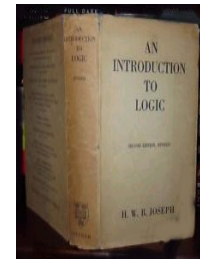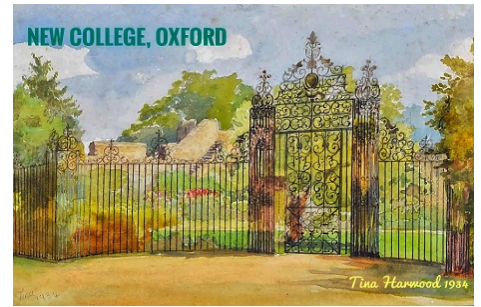
Horace William Brindley, "H. W. B." Joseph

British, born Rochester, 1867
* An Introduction to Logic
Some Problems in Ethics, Essays in Ancient and Modern Philosophy, Justice and Wages
Student, Tutor, Fellow for 52 years af New College, Oxford
Held fast within the Aristotelian formula amidst logic's post-Frege transformation
Fellow, British Academy and Chairman of its Philosophy section
Argued strongly against Marx's communism
Historian A. L. Rowse recalled: **"Joseph at New College was celebrated in his day for the inhuman rigour of his logic. Ordinary humans were depressed by it, some given nervous breakdowns, but some emerged unscathed from the Josephian mincing machine."**
Economist Roy Harrod, **"Joseph's philosophy was intellectually defective and may even have set up in his pupils habits of incorrect thinking about practical matters; nevertheless, he was concerned with the ultimate problems confronting mankind, and the mere fact that undergraduates have been induced to dwell upon these problems gave them a sort of moral stuffing and a sense of purpose in life thereafter."**
Bicycled 70 miles on his 70th birthday

§
 harmlessly compressed here

https://archive.org/details/introductiontolo00jose

The difference between a thesis
and a rule of inference
is from the standpoint of **logic**
a fundamental one. *

It is not easy to predict
the impact of non-Chrysippian[§] systems of **logic**
upon philosophical speculation.
It seems however that
the philosophical importance
may be at least as great as the importance of
non-euclidian systems of geometry.**

Logic is morality of thought and speech..

Reliable hearsay, see [Jan Woleński](#)
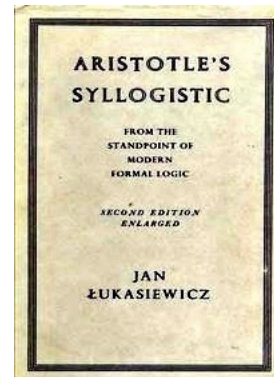
Jan Łukasiewicz

Polish, born Lwów, Galicia, 1878
* *Aristotle's Syllogistic from the Standpoint of Modern Formal Logic*
** "Philosophical Remarks on Many-Valued Systems of Propositional Logic"
Elements of Mathematical Logic
"Logistic and Philosophy", "Concerning the Method in Philosophy"
Handed a diamond studded "Doctoral Ring" by Emperor Franz Joseph
Professor Extraodinaire at University of Warsaw
Leading figure amongst the remarkable assemblage of Polish logicians
At great risk, remained in in Poland during the war
Active in the Underground University
Dreading life under communism, fled to the West just before the Warsaw Uprising disaster
Final 10 years, Lecturer in Logic at University College, Dublin

[§] The five logic axioms of [Chrysippus](#) rest upon a 2-value assumption: every proposition is True or False (and no other). Łukasiewicz is the first to explore and develop 3-value systems in which propositions are True/False/Other, that has evolved into Fuzzy Logic, even fuzzy digital architecture

https://www.porta-polonica.de/en/atlas-of-remembrance-places/jan-lukasiewicz

Logic is life in the human brain;
it may accompany life outside the brain
but it can never guide it
by virtue of its own power.
Indeed, if there is a harmony of will,
logic may well fall by the wayside.
For example, the simultaneous pronouncements
"There is no evil" and "There is nothing but evil"
may well express 'unity of meaning'
and might be simplistically characterized
by saying that its adherents
refuse to use the law of excluded middle.*

cf. Kolmogorov
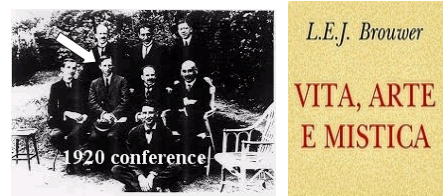
L. E. J. Brouwer

Dutch, born Overschie, Netherlands, 1881
Life, Art and Mysticism
The Untrustworthiness of the Principles of Logic, Philosophy and Foundations of Mathematics
Cambridge Lectures on Intuitionism, Geometry, Analysis, Topology and Mechanics
Rejected some never before questioned canons of logic such as 'P or not-P' and ' If not-not-P then P'
University of Amsterdam from student to Eminent Professor
Insisted that there is no truth outside the activity of constructing and thereby achieving it
In his own words, **"There are no non-experienced truths"**
Losing his notebook on a bus, changed his primary interest from mathematics to philosophy
Both praised and rebuked for conduct amid the harsh wartime Germany occupation
Died at age 85 when struck by a car in front of his house
Lunar crater named for him

http://www.marxists.org/reference/subject/philosophy/works/ne/brouwer.htm

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In **logic**, a judgment which I pronounce,
affirms a certain set of circumstances;
it takes them as true.
The philosophical question of the meaning of
and the justification for this thesis of truth arises;
the idea of objective truth is not denied,
but becomes a problem which has to be grasped
from what is given absolutely.
"Pure consciousness" is the seat
of that which is philosophically a priori.
On the other hand, a philosophic examination
of the thesis of truth must and will lead
to the conclusion
that none of these acts of perception, memory, etc.,
which present experiences from which I seize reality,
gives us a conclusive right to ascribe
to the perceived object an existence
and a constitution as perceived.
This right can always in its turn be over-ridden
by rights founded on other perceptions, etc.*

Logic is the hygiene[§]
that keeps ideas healthy and strong.

American Mathematical Monthly, November, 1992
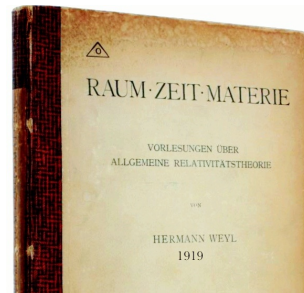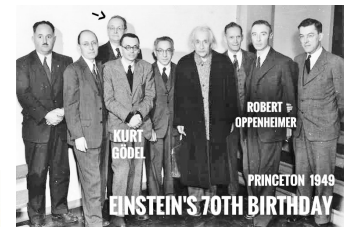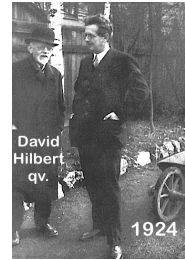
Hermann Weyl

German, born Elmshorn, 1885
Space, Time, Matter
The Continuum : A Critical Examination of the Foundation of Analysis
Philosophy of Mathematics and Natural Science
Most famous graduate of the renowned Gymnasium Christianeum (above)
A major figure in contemporary mathematics and physics
Repulsed by Nazism, with his Jewish wife escaped to the USA
Lived and worked at Princeton's Institute for Advanced Study
Returned to Europe several years after the war
Lunar crater named for him
§   cf. hygiene in [Rudolf Carnap](#)

http://www.weylmann.com/

The logical principle of the excluded middle
not only does not help to resolve
logical problems of various kinds,
but is in fact a dangerous theoretical obstacle
which should therefore be removed from science....
Let us suppose that I am to answer the question
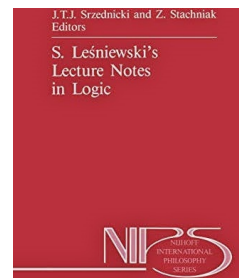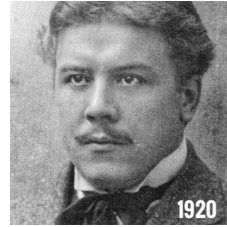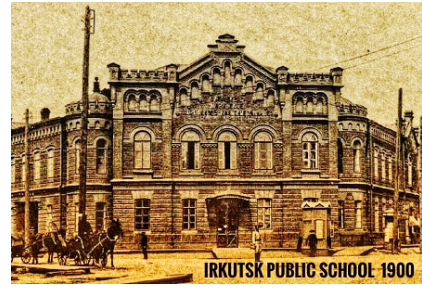of whether the following propositions are true:
'every centaur has a tail',
'a certain centaur does not have a tail'.
If we take into account our analysis above,
the answer to this question becomes quite easy.
Each of the propositions is obviously false
because the subject of each denotes nothing.
The word 'centaur' denotes nothing
because no object is a centaur.*

Stanisław Leśniewski

Polish, born Serpukhov (Russia) 1886
*"The Critique of the Logical Principle of the Excluded Middle"
"On the Foundations of Mathematics"   *Lecture Notes on Logic*
"Fundamentals of a New System of the Foundations of Mathematics"
Completed public school (above) in Irkutsk – "The Paris of Siberia"
Studied with notables in Germany; Doctorate 1912, Lwów University, Poland
In Moscow during the Great War teaching high school mathematics
Went back to Poland after the 1917 Bolshevik Revolution, never to return
Was a codebreaker aiding Poland's survival in the 1919–21 war with Communist Russia
Launched the renowned school of logic in Warsaw
Became Extraordinary Associate Professor at Warsaw University, full professor 17 years later!
Primary contribution was three nested formal systems: prototthetic, ontology, and mereology.
Rules on use/mention, canons of correct definition, and mereology guided modern logic
One of the founders of the distinction between objectlanguage and metalanguage
Rejected the prevailing axiomatic set theory and devised an alternative
Only one doctoral pupil--Alfred Tarski
A chain smoker, died aged 53 of thyroid cancer shortly before Germany invaded Poland in 1939
Papers destroyed during the tragic Warsaw Uprising of 1944

https://www.ontology.co/lesniewskis.htm

https://www.uni-log.org/ULS6-lesniewski.html

For what is **logic** but the art of proof ?
To reason logically is so to link one's propositions
that each should contain the reason
for the one succeeding it,
and should itself be demonstrated
by the one preceding it.
Or at any rate, whatever the order adopted
in the construction of one's own exposition,
it is to demonstrate judgments by each other.
If, therefore, the child remains for a long time
ignorant of the need for demonstration,
this is bound to have an effect
upon his manner of reasoning.*
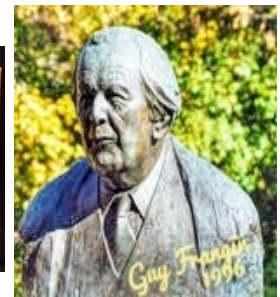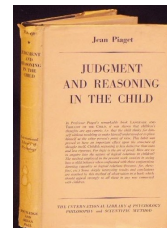
Jean Piaget

French, born Neuchâtel, 1896
Judgment and Reasoning in the Child
The Language and Thought of the Child .
The Growth of Logical Thinking from Childhood to Adolescence
The Early Growth of Logic in the Child, Intellectual Evolution from Adolescence to Adulthood
To Understand is to Invent;   The Future of Education
Instrumental in developing the Benet intelligence test
Ranking professor at several European Universities
Forty years as director of the International Bureau of Education
Insisted, as did John Dewey, that early learning activities should involve motor and mental operations
Recognized for research, theory, and reforms in education
> **"The principle goal of education is to create men who are capable of doing new things, not simply of
> repeating what other generations have done – men who are creative, inventive and discoverers."**
At age 11 wrote a short scientific paper on the albino sparrow
As a teenager, published well received papers on mollusks

http://www.piaget.org/aboutPiaget.html

FIND POSTAGE STAMP

We shall attempt to indicate
the way in which **logic** has developed
from the science of reflective thinking, or reasoning,
to the science of form.*

It is not easy to make clear
exactly in what sense of "necessary",
logical principles are necessary.
It is simple enough to assert that their truth is self-evident,
and that a self-evident truth must be necessarily true.
But self-evidence is a dangerous notion;
it seems to combine obviousness and **logical** priority.
What is obvious to one person is not to another;
it depends in part upon keenness of mental vision
and in part upon familiarity.
Unfortunately, we have learnt that a proposition
which has long been regarded by competent thinkers
as self-evident turns out to be false.
What is indubitable is not necessarily true;
our capacity to doubt depends upon
our previous knowledge and our mental agility.
We must be content to assert here
that **logical** principles are so fundamental to our thinking
that without presupposing them we could not think at all.**

1927 graduates

British, born North Finchley, London, 1885   L. Susan Stebbing
A Modern Introduction to Logic   (first modern logic text by a woman)
**A Modern Elementary Logic*
Logical Positivism and Analysis, Logic in Practice
Philosophy and the Physicists, Thinking to Some Purpose
Graduate Girton College, 1908 (cf. Constance Jones)
Student of William Ernest Johnson
Twenty-three year tenure at women's Bedford College, London
First ever woman full professor of philosophy in Great Britain
An active proponent of logical positivism; founder of the journal *Analysis*
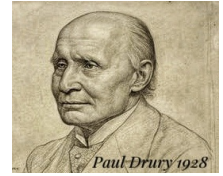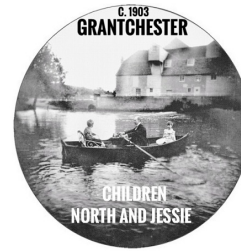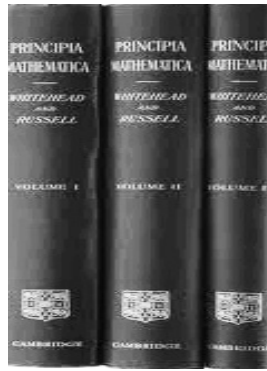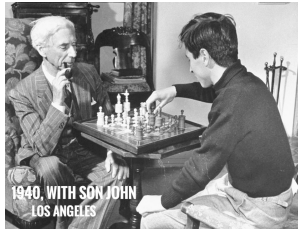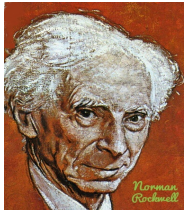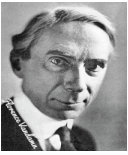A cogent analytical critic of the basis and implications of modern physics
President of the Mind Association and the Aristotelian Society
While visiting a professor at Columbia, enjoyed the view from atop the Empire State Building.

http://archive.org/details/modernelementary001072mbp
                              http://www.hist-analytic.com/susan_stebbing.htm
Link to The Victorian Web http://www.victorianweb.org/art/architecture/champneys/7.html

Principia Mathematica.

Hailed as the most significant work in logic since Aristotle

We must, to begin with, distinguish between a proposition as a fact
and a proposition as a vehicle of truth or falsehood. The following series of black marks:
"Socrates is mortal" is a fact of geography. The noise which I should make if I were to say
"Socrates is mortal" would be a fact of acoustics. The mental occurrence when I entertain the
belief "Socrates is mortal" is a fact of psychology. None of these introduces the notion of truth or
falsehood, which is, for **logic**, the essential characteristic of propositions... We must not be
misunderstood. It does not matter, for mathematical **logic**, what constitutes truth or falsehood;
all that matters is that they divide propositions into two classes according to certain rules.*

Bertrand Russell [Find postage stamp]

Knowledge of **logical** forms is something
quite different from
knowledge of existing things.*

British, born Trellech, Monmouthshire, Wales, 1872
Our Knowledge of the External World
Introduction to Mathematical Philosophy
On Denoting, The Analysis of Mind
The Problems of Philosophy
An Outline of Philosophy
Appointed to the Order of Merit ([more here](#))
Began as Whitehead's student
Logician, philosopher, mathematician
Discovered a fundamental paradox in Set Theory
Very exercised by "Scott is the author of Waverley"
Applauded eugenics, scorned non-Europeans
Imprisoned for pacifism during the Great War
Ever a peace activist and free-love advocate
One day out bicycling, realized he no longer loved
        his wife, so just kept onpedaling.

http://users.drew.edu/~jlenz/brs-about-br.html

Alfred North Whitehead

Without deductive **logic**
science would be
entirely useless.*

British, born Ramsgate, Kent, 1861
The Aims of Education
Science and the Modern World
The Concept of Nature, Process and Reality
Adventures in Ideas
Appointed to the Order of Merit ([more here](#))
Later, focused on Metaphysics and Cosmology
Masterful in the History of Ideas
Major exponent of Process Philosophy
Distinguished Professor:
        Trinity College, Cambridge, UK
        Imperial College, London
        Harvard University, USA
Hosted open house every weekend
Ordered all papers destroyed at death
Had no funeral as he requested

http://alfrednorthwhitehead.wwwhubs.com/

Scientific method both constitutes and discloses
the nature of **logical forms**.*

Traditional and contemporary **logic**
express the last result of discriminative analysis
employed in the search for dependable inference.
Improve the means of experimentation
and that result may be replaced tomorrow
by new apprehensions.**

The Greeks [see Plato's *Meno*] acutely raised the question:
How can we learn?
For either we know already what we are after,
or else we do not know. In neither case is learning possible;
on the first alternative because we know already;
on the second, because we do not know what to look for,
nor if, by chance, we find it,
can we tell that it is what we were after.
Taken by itself, the Greek argument
is a nice piece of formal **logic**.
However, the dilemma makes no provision
for coming to know, for learning;
it assumes either complete knowledge or complete ignorance.
Nevertheless the twilight zone of inquiry, of thinking, exists.
The possibility of hypothetical conclusions, of tentative results,
is the fact which the Greek dilemma overlooked.***
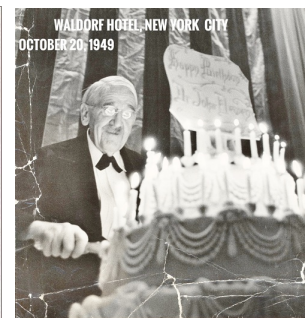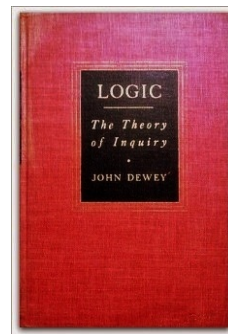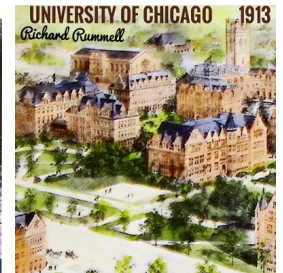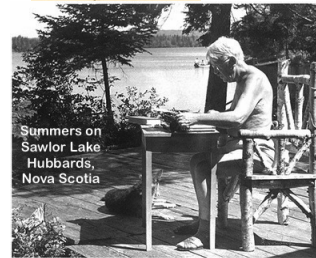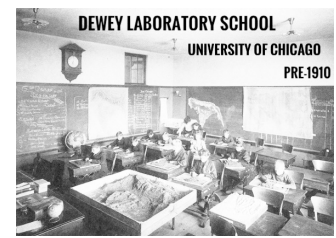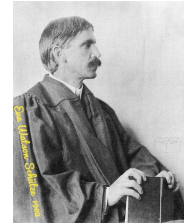
John Dewey
(90th birthday–also see [Suppes](#) and [Popper](#))

American, born Burlington, Vermont, 1859
* *Logic: The Theory of Inquiry*
** *Essays in Experimental Logic*
*** *Democracy and Education*
Experience and Nature, The Quest For Certainty
Acclaimed for leadership in redefining the principles, goals, and methods of education
His legacy epitomized by the dictum–"Learn by Doing"
Originated Laboratory Elementary School programs
Following [Peirce](#) and [James,](#) the principal elaboration and extension of Pragmatism
Argued for an essential social/practical basis in all knowledge and inquiry, even logic itself!
Forty books and 170 articles
Traveled worldwide advocating democratic reforms in society and education

http://www.anb.org/articles/20/20-00289.html   FIND POSTAGE STAMP

http://www.nasonline.org/publications/biographical-memoirs/memoir-pdfs/dewey-john.pdf

Logic treats whatever belongs
to a thinking about anything at all,
treats that which makes thinking, as such,
intrinsically possible,
treats the lawfulness that
every thinking, as thinking, must satisfy.
[But] only what exists as a free
being could be at all
bound by an obligatory lawfulness.
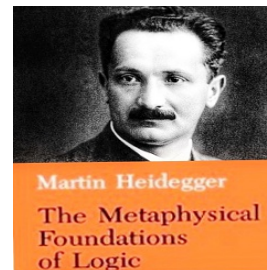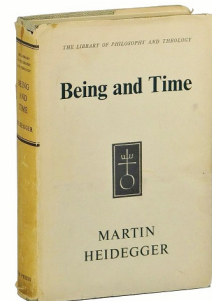Freedom alone
can be the source of obligation.
A basic problem of **logic**,
the law-governedness of thinking,
reveals itself to be, in its ground,
a problem of human existence
the problem of freedom.*§
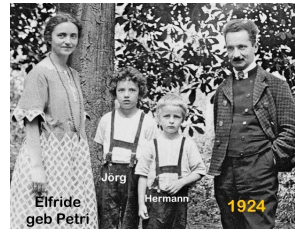
right, with [Edmund Husserl](#)

with [Ernst Cassirer](#)

Martin Heidegger

German, born Messkirch, 1889
The Metaphysical Foundations of Logic
Being and Time　　(famed groundbreaking work in Existentialism)
Logic as the Question Concerning the Essence of Language
Basic Questions of Philosophy, Basic Concepts
Professor at the University of Freiburg
Highly prominent in post-Nietzsche continental philosophy
Major works in phenomenology, history of philosophy, aesthetics, modern culture, literary criticism,.....more
Sought out logic's philosophical grounding, apart from its scientific-formalist superstructure
Joined and supported Germany's Nazi party, praised Hitler, later lamenting **"the greatest mistake of my life"**

§ That is, do the laws of logic encroach upon man's existential freedom? Heidegger's answer –"No"– derives from his vast general philosophy.

A variable in a proposition of **logic**
is, after all, nothing but a token that characterizes
certain argument places and operators
as belonging together; thus it has the status
of a mere auxiliary notion that is really inappropriate
to the constant, "eternal" essence
of the propositions of **logic**.*
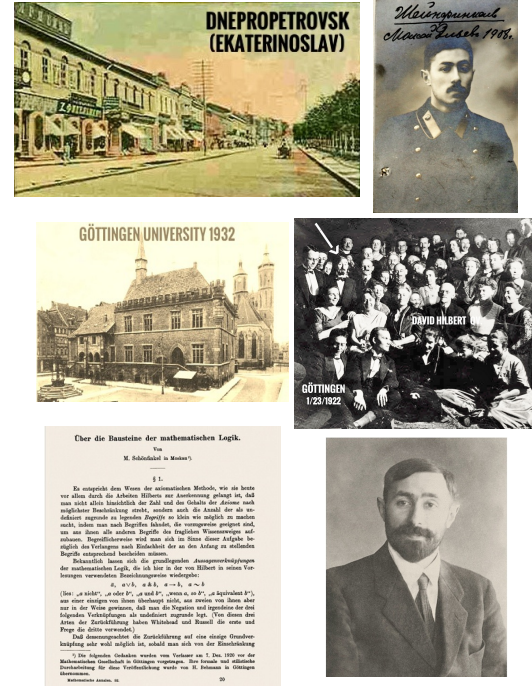
Moses Schönfinkel

§ Russian, born Dnepropetrovsk (Ekaterinoslav), Ukraine, 1888
* "On the Building Blocks of Mathematical Logic"
"On the Decision Problem of Mathematical Logic"
Engineer in the army of the Tzar
Graduated Novorossiysk University, Odessa
Fortunately went to Göttingen University in Germany one month before the Great War
There 10 years to study mathematics; attaining status in the [David Hilbert](#) circle
Launched Combinatory Logic– archetype of the λ-calculus for computer machine language
Moved back to Russia, but his life densely clouded by sovietization and later Stalinism
Died soon after the 1942 Battle of Moscow
Never seen papers said to have been burned

§ We highly recommend the biographical research by the well known scholar [Stephen Wolfram](#).

Original 1920 paper read at Göttingen
https://courses.engr.illinois.edu/cs522/sp2016/OnTheBuildingBlocksOfMathematicalLogic.pdf

A gentle and humorous introduction to Combinatory Logic
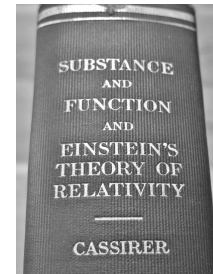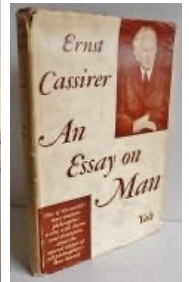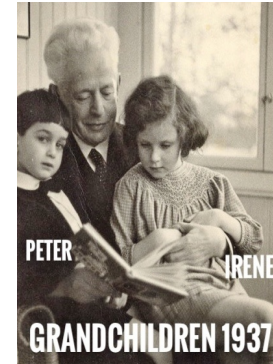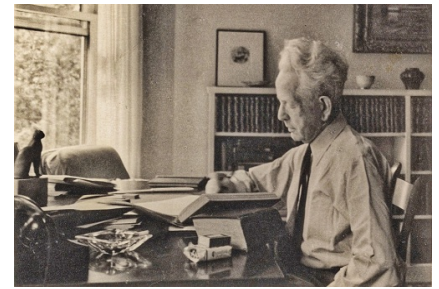https://en.wikipedia.org/wiki/To_Mock_a_Mockingbird

Ancient **logic** is entirely founded
on the relation of 'subject' and 'predicate',
on the relation of the given concept
to its also given and final properties.
It seeks finally to grasp
the absolute and essential properties
of absolute self-existent substances.
Modern **logic**, on the contrary,
in the course of its development,
comes to abandon this ideal
and transforms **logic** into a pure doctrine
of form and relation.
The possibility of all determinate character
of the content of knowledge
is grounded, for it, in the laws of these forms,
which are not reducible to mere relations of subsumptions,
but include equally all the different possible types
of relational construction
and connection of elements of thought.*

PETER   IRENE

GRANDCHILDREN 1937

Ernst Cassirer
An Essay on Man

SUBSTANCE
AND
FUNCTION
AND
EINSTEIN'S
THEORY OF
RELATIVITY

CASSIRER

HAMBURG UNIVERSITÄT

German, born Breslau, 1874   Ernst Cassirer
Einstein's Theory of Relativity
 Substance and Function, The Myth of the State
 The Philosophy of Symbolic Forms   (a groundbreaking masterpiece)
 Language and Myth   ([Susanne Langer's](#) translation of *Sprache und Mythos*)
An Essay on Man   (incisive)
Kant and the Problem of Metaphysics;   The Individual and the Cosmos in Renaissance Philosophy
A truly magnificent philosopher and intellectual historian of lasting renown
Portrayed the evolution of basic concepts once held to be unchangeable
Distinguished professor at Hamburg and Berlin
Famous debate with [Martin Heidegger](#) in Davos, Switzerland
Delineated the universal and conceptual impact of the new physics and mathematics
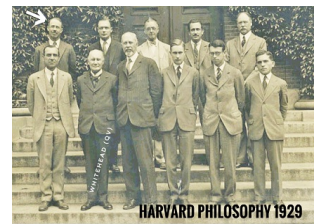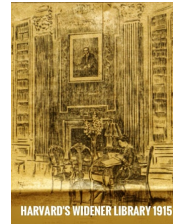Among a tiny minority of German Jewry, foresaw impending disaster and left before Nazi domination
Eminent at Gothenburg, Oxford, Yale, and Columbia
Photographic memory, but always needed written instructions to fill his fountain pen

http://archive.org/details/substanceandfunc00cassuoft

http://philpapers.org/archive/MORAVD.3.pdf

Symbolic **logic** is the development of
the most general principles of rational procedure,
in ideographic symbols, and in a form which exhibits
the connection of these principles one with another
......The important characteristics of this form are:
(1) the use of ideograms instead of
the phonograms of ordinary language;
(2) the deductive method which may here
be taken to mean simply that the greater portion
of the subject matter is derived from
a relatively few principles by operations which are exact;
and (3) the use of variables
having a definite range of significance.*
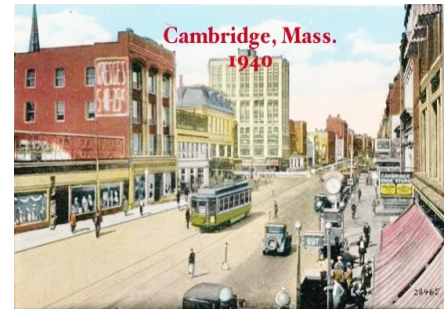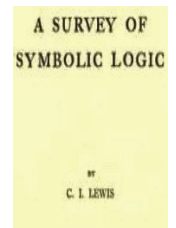
The extended use of symbolic procedures opens up
so much that is both new and important
that symbolic **logic** becomes
an immensely deeper and wider study than the **logic** of tradition.**
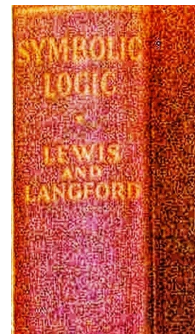
C. I. Lewis

American, born Stoneham, Massachusetts   1883
A Survey of Symbolic Logic
Gathering the important primary works in symbolic logic into its first textbook exposition
And the first to add modal operations (possibility, necessity)
**Symbolic Logic*, with Cooper H. Langford   (leading textbook for many years)
Mind and the World Order: Outline of a Theory of Knowledge   (highly acclaimed)
An Analysis of Knowledge and Valuation, Our Social Inheritance, The Ground and Nature of the Right
Clearly nurtured and sustained by post-Kant Idealism
Held to the a priori/a posteriori dichotomy despite the rising tide against it
Argued that knowledge is a product of brute sensory data plus conceptualization
Regarded moral, aesthetic, and value statements just as true (or false) as factual or scientific statements
Insisted that the final arbiter in all philosophy (including logic) is Reflection.
Served in the Army during The Great War
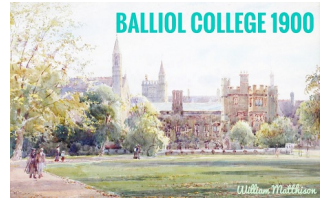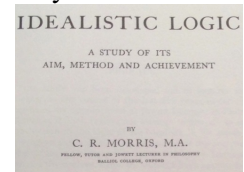Would refund his own royalty to any student who purchased a Lewis book

https://archive.org/details/algebraoflogic00coutiala/page/n7/mode/2up

See his interesting connection to the 12th century [William of Soissons](#) --------- footnote 1

TONBRIDGE SCHOOL, KENT 1900

BALLIOL COLLEGE 1900

If every particular science must itself alone
be answerable for the validity
of its own reasoning,
and must brook no interference
on the authority of general **logic**,
can there any longer be any such thing as **logic**?
If this were sound, then every science
would have a **logic** of its own.
But this can hardly be the whole truth,
and by examining and comparing
the mind's thinking in the various sciences
we might throw light
on the nature of that activity of mind in general,
which to some extent informs them all.*

Sensory Garden, Charles Morris Hall
University of Leeds

Charles Richard Morris

British, born Sutton Valence, Kent, 1898
Idealistic Logic: A Study of its Aim, Method and Achievement (recommended)
Locke, Berkeley, Hume
Student at Tonbridge School, Kent (above)
Philosophy Fellow of Balliol College, Oxford; later Vice-Chancellor, University of Leeds
Visiting professor, University of Michigan, 1926
Respected scholar in British Empiricism and Idealism
A stocky man, fair tending to ruddy, and much more like a Scot than an Englishman
Royal Artillery in France in the Great War
Life peer as Lord Morris, Baron Grasmere

http://archive.org/details/idealisticlogic029603mbp

Logic must turn out to be
of a totally different kind than any other science.

Logic is prior to every experience...
Logic is not a theory but a reflection of the world...
Our fundamental principle is that every question
which can be decided at all by **logic**
can be decided without further trouble.
And if we get into a situation
where we need to answer such a problem
by looking at the world,
this shows that we are on a fundamentally wrong track...
In a certain sense we cannot make mistakes in **logic**...
Logic is transcendental.*
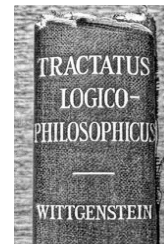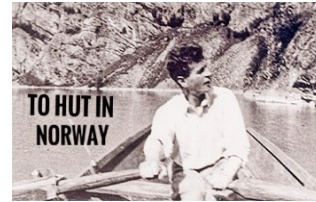
Ludwig Wittgenstein

Austrian, born Vienna, 1888
Tractatus Logico–Philosophicus
        A most insightful and groundbreaking answer to the question "What Is logic?"
Philosophical Investigations
Born to extreme luxury, but gave away his inheritance
Considered one of the most original philosophers of the 20th century
Studied with [Bertrand Russell](#)
Few publications, but highly influential
Universally regarded as the seminal genius in the Philosophy of Language
Served loyally in the army of Austria (against Britain) throughout the Great War
Ten years later, returned to Britain permanently
Decried philosophy and insisted that his students do something "useful" instead
Enjoyed Mickey Mouse cartoons and B-grade cowboy movies
Brother Paul an internationally renowned left-hand concert pianist-------------->

http://www.friesian.com/wittgen.htm

The triad of critical disciplines
--**Logic**, Aesthetics, and Ethics--
correspond to the three so-called
fundamental values of truth, beauty, and goodness,
but the correspondence is by no means exact.
For, whereas the chief question "What is true?"
is one which all the sciences answer,
each in its own domain, and is in no way
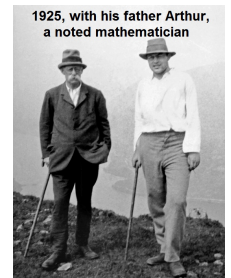the peculiar concern of **Logic**.
What **Logic** studies is not so much the truth of opinions,
as the reasonableness of arguments or inferences.
As the distinction is an important one,
it may be well to dwell on it.*

Logic, we may agree, is concerned
not with what men actually believe,
but what they ought to believe......
In a formally valid argument,
to deny the conclusion
while accepting the premises
would be self-contradictory.**

Fellow's set
King's College, Cambridge

1925, with his father Arthur,
a noted mathematician
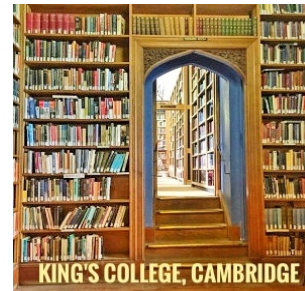
FRANK PLUMPTON RAMSEY

On Truth
Original Manuscript Materials (1927–1929)
from the Ramsey Collection
at the University of Pittsburgh

edited by
NICHOLAS RESCHER
University of Pittsburgh, U.S.A.
and
ULRICH MAJER
Georg-August University, Göttingen, Germany

Patrick Gallegos 2017

Frank Ramsey

British, born Cambridge, 1903
*On Truth   **Philosophical Papers,   Notes on Philosophy*
The Foundations of Mathematics and other Logical Essays
Essays in Philosophy, Logic, Mathematics and Economics, Probability and Mathematics
Highly original contributions in logic, epistemology, mathematics, and economics
Proved that in sizeable collections, total disorder is logically impossible
Developed a still widely followed model for the ideal pricing of goods and services
Devised an investment/saving formula to optimize utility in a nation's economy
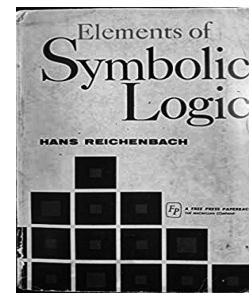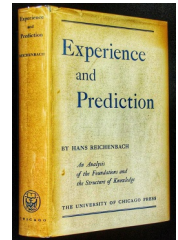Dedicated hiker and youngest ever Fellow of King's College, Cambridge
First translation of Wittgenstein's *Tractatus Logico–Philosophicus*
Most regrettably, died at age 27 of jaundice, having suffered chronic liver disease
Brother Michael–Archbishop of Canterbury

http://www.informationphilosopher.com/knowledge/philosophers/ramsey/

Once a result of thinking is obtained,
we can reorder our thoughts in a cogent way,
constructing a chain of thoughts
between point of departure and point of arrival;
it is this rational reconstruction of thinking
that is controlled by **logic**,
and whose analysis reveals
those rules which we call **logical** laws.*

The philosopher of science is not much interested
in the thought processes which lead
to scientific discoveries;
he looks for a **logica**l analysis of the completed theory,
including the relationships establishing its validity.
That is, he is not interested in the context of discovery,
but in the context of justification.**

Hans Reichenbach

German/American, born Hamburg, 1891
Elements of Symbolic Logic
** "The Philosophical Significance of the Theory of Relativity"
Experience and Prediction;   The Rise of Scientific Philosophy;   From Copernicus to Einstein
Prodigious output in logic, mathematics, physics, and history of science
A primary mover in new philosophy of science
Stressed the role of logic in finding the philosophical content of scientific theories
A loyal German soldier in the Great War
Of Jewish grandparents, was ousted from Professorship at University of Berlin in 1933
Being vocally anti-Nazi, moved to Turkey and then to the USA
Distinguished professor at UCLA
Naturalized American citizen late in life

http://texts.cdlib.org/view?docId=hb0w10035d&doc.view=frames&chunk.id=div00048&toc.depth=1&toc.ix.

The exercise of thought along **logical** lines
is the great liberation, or, at any rate, the basis
of all civilization.
...
The only way to overcome dogmatism
is by formulating our position
in **logical form** so that we can see
that we have taken certain things for granted,
and that someone may
from a purely **logical** point of view
start with the denial of what we have asserted.
<u>Of course, this does not apply to
the principles of **logic** themselves.</u>*
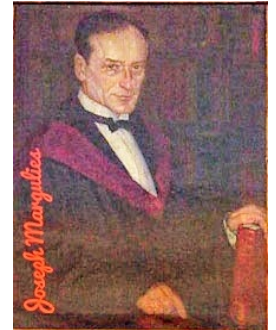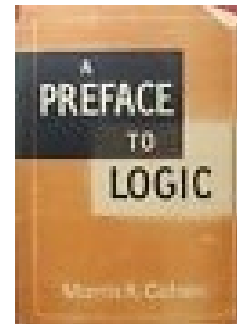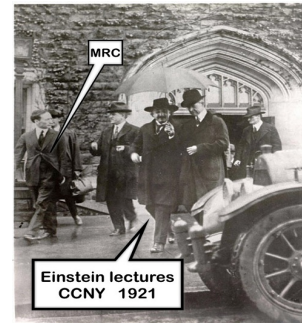
Morris Raphael Cohen

American, born Minsk, Russia, 1898 (to USA age twelve)
A Preface to Logic
Reason and Nature, Law and the Social Order
An Introduction to Logic and the Scientific Method (with Ernest Nagel)
The Faith of a Liberal, The Meaning of Human History
Opposed the then pervasive idealism of Immanuel Kant, F. H. Bradley, and Josiah Royce
Advocated logical and objective approach to the philosophical enterprise
Professorships in both Law and Philosophy
Astoundingly quick minded and tenacious; revered by students
Committed to social-political-economic liberalism; opposed to laissez-faire capitalism
While a student at Harvard, roomed with future Supreme Court Justice Felix Frankfurter
Said that baseball is a national religion

http://www.encyclopedia.com/topic/Morris_Raphael_Cohen.aspx

Logic has a universal subject matter,
and is the common denominator
of the special sciences.*

Logical inference leads from premises–
statements assumed or believed
for whatever reason–
to conclusions which can be shown
on purely **logical** grounds
to be true if the premises are true.
Techniques to this end
are a primary business of **logic**.**

Harvard Square   c. 1935

90th birthday
Douglas, Victoria, Alex

HALIFAX 1980
MARJORIE
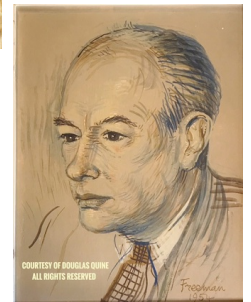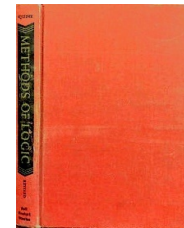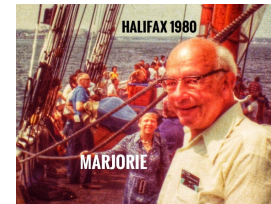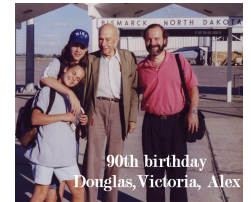
Willard V. O. Quine

American, born Akron, Ohio, 1908
Mathematical Logic
**Methods Of Logic*

> *"I had naturally assumed that logic and humor were sworn enemies, never to be caught together within the covers of a single book. Quine's Methods of Logic took me aback for there, almost at the beginning, humor took its regular place in making logic crystal clear to the reader. Quine's motto was evidently: clarity yes; deadpan literalism no. One could apparently have fun while learning logic"…***Israel Scheffler**

Two Dogmas of Empiricism,   Word and Object;
From a Logical Point of View; The Time of My Life (autobiography)
Held that only science and common sense produce knowledge
Would deny [Al-Kindi's](#) claim that logic reveals a reality that is beyond ordinary experience
At Harvard University from graduate student to Professor Emeritus
Recipient of the **Schock Prize**, the highest international honor in logic and philosophy
Was instrumental in urging European colleagues to come to America prior to the World War
Worked with the decoding of the German Enigma cipher
Fluent in French, Spanish, Italian, Portugese, and German
Enjoyed Dixieland jazz and Mexican folk songs
Traveled to all 50 states and invited to dozens of countries
Played the mandolin at home gatherings
Typed Ph.D. dissertation and all subsequent books on his 1927 Remington
      Unneeded keys replaced with important logic/math characters such as $\neg$, $\in$, $\supset$, $\leftrightarrow$
      When asked why is there no ? key, he replied **"Well, you see, I deal in certainties."**

http://www.wvquine.org/

Suppose you ask a question,
"What is it that makes an argument valid?"
And the answer is, "conformity to **logi**c."
And what are the laws of **logic**?
Well, there is a series of them, of which I suppose
that the law of contradiction is the most important.
Now, how do you know
that the law of contradiction is true?
Evidently, not by argument,
because every step of the argument
would involve appeal to the law of contradiction,
so you would be moving in a circle.
Therefore, the law of contradiction must be
a self-evident, intuitively-grasped truth.

By permission , Scott Palmer, *Conversation With Brand Blanshard*, © 2008.

Logic is a set of time-less relations among concepts,
and it never descends
into the flux of events to control or divert the current.
It is eternal, and what is eternal does not act.*
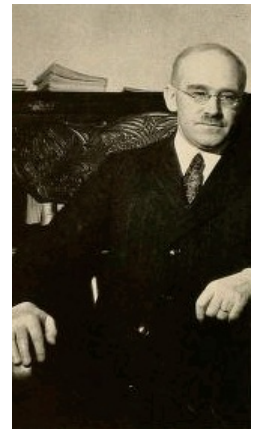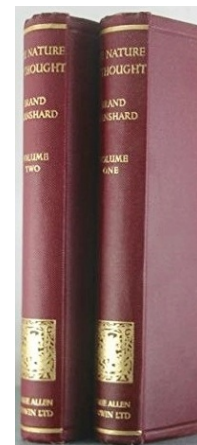
Brand Blanshard

American, born Fredricksburg, Ohio, 1892
The Nature of Thought
Reason and Goodness, Reason and Analysis
The Uses of a Liberal Education, Reason and Belief
Revered professor at Swarthmore College and later Yale University
Pre-eminent in the preservation of classical rationalism over the last 150 years
Firm advocate of the importance of reason and reasonableness in life
Profound critiques of logical positivism and emotivism
During the Great War, volunteered in the British Army YMCA morale service
Had two rubber stamps for grading papers–one a smiling happy face, the other a shovel!!

http://www.anthonyflood.com/blanshard.htm

A system of symbolic **logic** is not a theory
(i.e. a system of assertions about objects),
but a *language*
(a system of signs and rules for their use)
so constructed that into it can be translated
the sentences of any given theory
about any objects whatever,
provided only that some signs of the language
have received determinant interpretations
such that the signs serve to designate
the basic concepts of the theory in question.*

Logic must often play the role of the critic,
especially in our own days.
Its task is to serve as a spiritual hygiene§,
cautioning men against the disease
of intellectual confusion.
It has the ungrateful duty,
whenever it finds symptoms of this disease,
to pronounce the unwelcome diagnosis. …
The logician himself has no remedy to offer,
and must turn to psychologists
and social scientists for aid.**

In **logic**, there are no morals.***
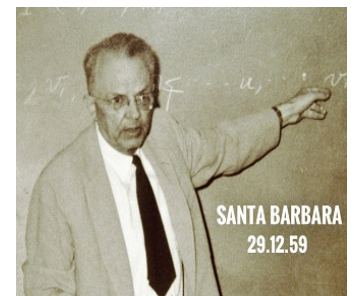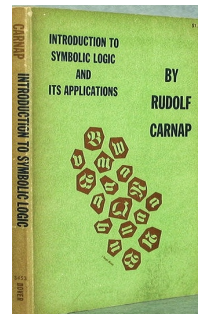
Rudolf Carnap

German, born Ronsdorf, 1891
 * *Introduction to Symbolic Logic and Its Applications*
** 'Logic', pp.117f. in Edgar Adrian et alii, *Factors Determining Human Behavior*
*** *The Logical Syntax of Language*
Logical Structure of the World;, The Unity of Science; Introduction to Semantics; Meaning and Necessity
Pseudo-Problems in Philosophy   (highly recommended)
Student of [Gottlob Frege](#) at Jena; himself professor at Vienna and Prague
Prominent in the famous 1907-1934 Vienna Circle", writing its logical positivism manifesto:
    that knowledge is gained through empiricism along with logical/mathematical deduction
Being pacifist/socialist and aided by [W. V. O. Quine](#) fled Germany prior to the Nazi stranglehold
Then American citizenship and on faculties at Harvard, Chicago, Princeton, and Los Angeles
Rejected metaphysics as meaningless because its statements cannot be proved or disproved by experience.
Sought a precise understanding of the difference between analytic and synthetic statements
Insisted that no empirical statement can be necessarily true.
Championed the Verification Principle: that an empirical statement is meaningful only if it is verifiable
Learned Esperanto, promoted its spread, and spoke it whenever possible

 § cf. Hygiene in [Hermann Weyl](#)   https://archive.org/details/meaningandnecess033225mbp

Alongside [classical] theoretical **logic**,
which systematizes the proof schemata of theoretical truths,
one can systematize the schemata of problem-solving.
Then, corresponding to the principle of the [hypothetical] syllogism,
we find for example, the following principle:
If we can reduce the solution of Q to that of P,
and reduce the solution of R to that of Q,
then we can also reduce the solution of R to that of P.
One can introduce a corresponding symbolic language,
and give the formal calculation rules for the symbolic structure
of the system of such problem-solving schemata.
One thereby obtains, alongside theoretical **logic**,
a new calculus of problems.
Then the following remarkable fact holds:
The calculus of problems coincides
with [Brouwer's](#) intuitionistic **logic**.
...
If one adds the formula P ∨ ¬ P,
(in sentential **logic,** the principle of the excluded middle),
one obtains a complete axiom system for classical sentential **logic**.
In our problem interpretation the formula reads as follows:
to provide a general method for each problem P,
either to give a solution to P
or to derive a contradiction from the assumption of such a solution!
In particular, if the problem Q consists of proving a statement,
then one would need to possess a general method for each statement,
either to prove it, or from it to derive a contradiction.*
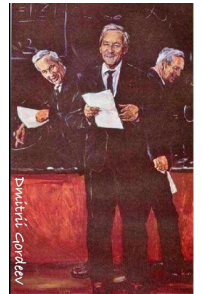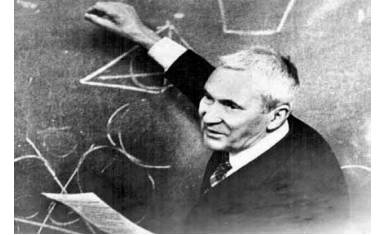
Andrei Kolmogorov

Russian, born Tambov,1903
* "On the Interpretation of Intuitionistic Logic"
"On the Principle of Excluded Middle"
Mathematics: Its Content, Methods, and Meaning
Foundations of the Theory of Probability
Mathematics of the 19th century, vol. 1: Mathematical logic, algebra....
Phenomenal work in numerous areas of mathematics and science; credited with founding several new disciplines
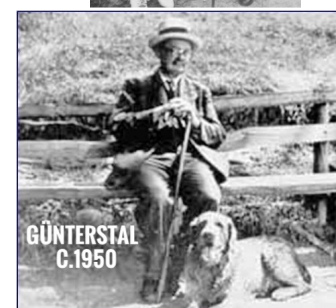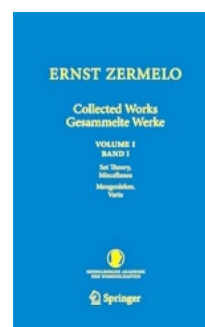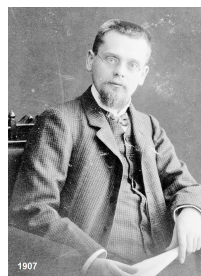Found himself embroiled in one of the Soviet purge trials of academe in the 1930s
Married his gymnasium sweetheart
Gave personal attention to the education of gifted children
Many international awards and medals; traveled and lectured worldwide
Very interested in the structure of the poetry of Pushkin.

http://homepages.cwi.nl/~paulv/KOLMOGOROV.BIOGRAPHY.html   FIND POSTAGE STAMP

BERLIN 1900

1907

BAHNHOFPLATZ, ZURICH. 1915

Now what does "prove" mean?
A "proof" is the derivation of a new proposition
from other given propositions that proceeds
in accordance with general **logical** rules and laws,
where the truth of the latter secures that of the former.
In a logically complete system ,
it is possible that for any proposition S
constructed from the fundamental relations
either it itself or its negation is contained in the system.*

GÜNTERSTAL
DAILY LUNCH AT THE "COOL FLAGON"

GERTRUD GEB. SEEKAMP
ERNST IN GÜNTERSTAL

ERNST ZERMELO
Collected Works
Gesammelte Werke
VOLUME I
BAND I
Set Theory, Miscellanea
Mengenlehre, Varia
Springer

GÜNTERSTAL
C.1950

Ernst Zermelo

German, born Berlin, 1871
* "What is Mathematics?" (Warsaw lectures, 1929)
"Proof that every set can be well-ordered"
"On an Application of Set Theory to the Theory of the Game of Chess"
"Hydrodynamical investigations of vortex motions in the surface of a sphere"
"On boundary numbers and domains of sets......."
Early insightful critique of the Second Law of Thermodynamics
Formulated the still standard axioms of set theory, improved by Fraenkel and von Neumann
Professor at Göttingen, Zurich, and Freiburg universities
Insisted on the Law of Excluded Middle against Intuitionism (Brouwer, Kolmogorov)
Proved that in chess there are guaranteed but non-computable win strategies
Forced out of the University of Freiburg for refusing the Nazi salute
But reinstated after the war
Age 72 married the 31-year younger Gertrud Seekamp, who outlived him by 50 years

http://home.mathematik.uni-freiburg.de/hde/hde/ZBReviews.pdf
https://archive.org/details/springer_10.1007-978-3-540-79384-7
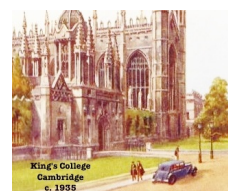
Owing to the impossibility of finding a
formal **logic** which will wholly eliminate
the necessity of using intuition
we naturally turn to 'non-constructive' systems of **logic**
with which not all the steps in a proof are mechanical,
some being intuitive. ...
What properties do we desire
a non-constructive **logic** to have?
.... Most important of all,
it must be beyond all reasonable doubt
that the **logic** leads to correct results
whenever the intuitive steps are correct.*
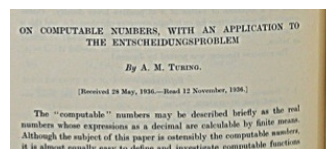
Alan Turing

British, born London, 1912
* "Systems of logic defined by ordinals"
"On computable numbers, with an application to the Entscheidungsproblem [Decision Problem]"
"Proposed Electronic Calculator", "Intelligent Machinery"
"Programmers' Handbook for the Manchester Electronic Computer machinery and intelligence"
Considered the progenitor of the digital Computer Age
Fellow of King's College, Cambridge; Reader and Director of Mathematics at Manchester University
Devised the "Turing Test" for whether a machine can think:
    If, under controlled conditions, a person has a conversation with a machine and the human is sure he
    is talking to a person, then the machine is thinking.
Prime genius in breaking (using advanced logic) Germany's wartime Enigma cipher
Thereby markedly shortening the war and saving and untold lives
Leading figure in Mark I at Manchester, the world's first modern computer
A recognized and well regarded marathon runner
Convicted, 1952, under the Labouchère Amendment of 1885
Chose suicide and pardoned by royal decree 59 years later

http://www.turing.org.uk/index.html   FIND POSTAGE STAMP

The great value of analogy
is that by it, and it alone,
we are led to seeing a single **logical form**
in things which may be
entirely discrepant in content.
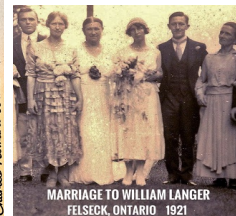The power of recognizing similar forms
is **logical** intuition.
All may sharpen the precision
of their understanding,
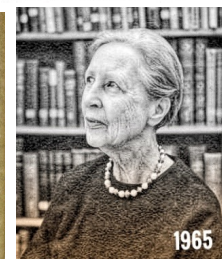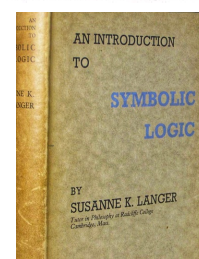by a systematic study
of principles of structure.
...
Logic develops the art of seeing structures
almost to the point of habit,
and reduces to a minimum
the danger of getting lost amid abstract ideas.*

American, born New York City, 1895   Susanne Langer
Introduction to Symbolic Logic
The Practice of Philosophy, Reason, Rite, and Art
The Cruise of the Little Dipper, and Other Fairy Tales (during Ph.D. study)
Philosophy in a New Key (a national Best Seller)
Radcliffe B.A, and Ph.D then Ph.D. tutor
Mind: An Essay on Human Feeling (trilogy on various forms of human expression)
Dedicated to the search for the underlying meanings and forms throughout culture
Argued that art is a logical expression of emotion which ordinary language cannot approach
Translation of Ernst Cassirer *Language and Myth* a best seller in USA and UK
Highly regarded seminal analyses in aesthetics, creativity, myth, and (strikingly) music
Much sought after for public and university lecture tours;   accomplished cellist and pianist
Age 8: gave a 40-minute talk on frogs, from memory; Age 12: read Immanuel Kant, in German
As a Radcliffe undergraduate, was witch/enchantress in the opera *Dido and Aeneas*

http://www.anthonyflood.com/langer.htm

https://ia802307.us.archive.org/25/items/pdfy-rhrw7VPajPHIhLwH/Philosophy%20in%20a%20New%20Key%2C%20Suzanne%20K.%20Langer.pdf

Thus the specific task of **logic**
is the study of the
conditions under which
one proposition necessarily follows
and may therefore be deduced
from one or more others,
regardless of whether the latter
are in fact true.
...
It is not the business of **logic**
to describe what happens in one's mind
as one discovers
rigorous and determinant solutions
to a problem.
That is a factual question of psychology.
Logic is relevant
at every step only in determining
whether what "seems" an implication
between one proposition and another
is indeed such.*
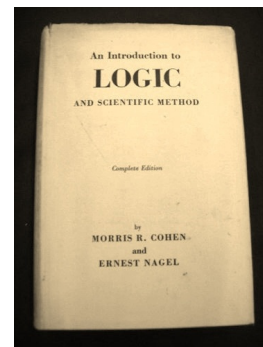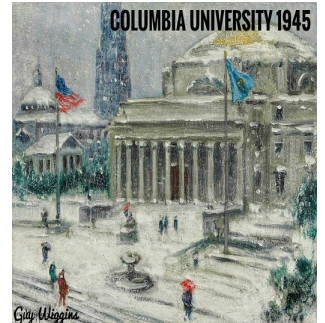
Ernest Nagel

American, born Bohemia, 1901 (to USA age ten)
An Introduction to Logic and Scientific Method (with [Morris Raphael Cohen](#))
           (widely used and highly influential)
The Meaning of Reduction in the Natural Sciences
Sovereign Reason;   Logic without Metaphysics
Gödel's Proof (with James R. Newman, an easy-to-understand exposition)
The Structure of Science (highly regarded)
Opposed the idealism metaphysics so prevalent at the time
Dealt masterfully with the logical structure of scientific explanation and theory
Probed the philosophical implications of relativity and quantum mechanics
Entire life in New York City (Columbia University)
Averse to travel except to summer cabin in Wardsboro, Vermont (above)

http://www.ditext.com/nagel/sr.html

Difficult to separate from epistemology
but still regarded commonly
as a distinct discipline is **logic**.
The laws of **logic** must be known
a priori or not at all.
They certainly are not
a matter for empirical observation.
Logic is a study
of the different kinds of propositions
and the relations between them
which justify inference which is only possible
because there are special connections
between the propositions involved
such that one necessarily follows from others.
It is a chief function of **logic**
to study these connections.*
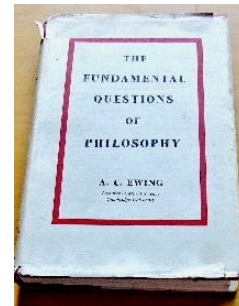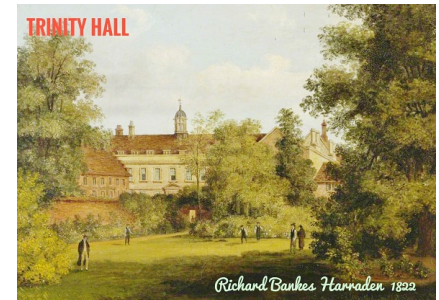
A. C. Ewing

British, born Leicester, 1899
The Fundamental Questions of Philosophy
Non-Linguistic Philosophy   (strong response to [Wittgenstein](#) and Philosophy of Language)
Kant's Treatment of Causality;   Reason and Intuition;   The Definition of Good;   Ethics
The Idealist Tradition; Value and Reality: The Philosophical Case for Theism
Respected Moral Science reader at Trinity Hall, Cambridge; honorary Fellow of Jesus College
Insists that the History of Philosophy is an essential aspect of the enterprise of philosophy
Champions the long-standing traditions amidst the growth of arcane and symbolic analysis
Argues that rational philosophy affords a sound grounding for Theism
Fellow of the British Academy

> **I had the prized satisfaction of knowing him well over many years, and can testify to his sweetness of temper, his rare modesty, and, in the face of many frustrations, his extraordinary freedom from malice or bitterness. He was singularly impersonal and fair in controversy; his devotion to philosophy was complete; and he brought to its service one of the keenest minds of his generation....... [Brand Blanshard](#)**

https://archiveshub.jisc.ac.uk/manchesteruniversity/archives/0c39965e-de32-33ca-9202-6e8951679ffa

Logic is concerned with the analysis of sentences
or of propositions and of proofs with attention to the form,
in abstraction from the matter.
This distinction between form and matter
is not easy to make precise immediately,
but it may be illustrated by examples:

[1] I have seen a portrait of John Wilkes Booth;
John Wilkes Booth assassinated Abraham Lincoln;
thus I have seen a portrait of an assassin of Abraham Lincoln.

[2] I have seen a portrait of somebody;
somebody invented the wheeled vehicle;
thus I have seen a portrait of an inventor of the wheeled vehicle.
....
Argument 1 will be recognized as valid,
and presumably from the **logical** form alone, but 2 is invalid.
The superficial linguistic analogy
of the two arguments as stated is deceptive.
In this case the deception is quickly dispelled
upon going beyond the appearance of the language
to consider the meaning.*
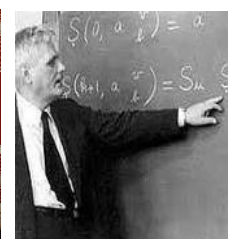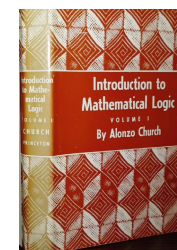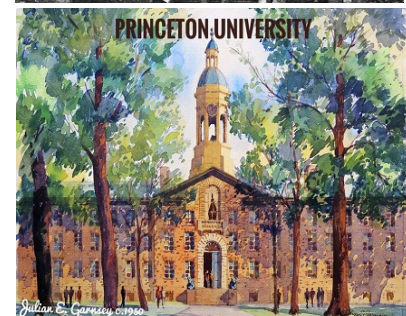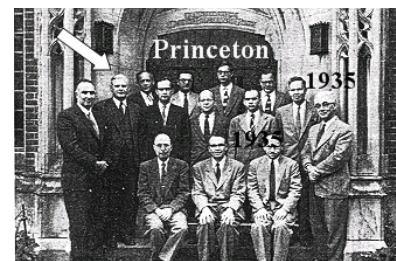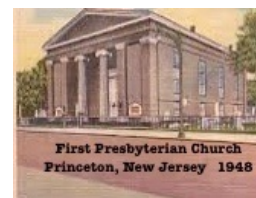
Alonzo Church

American, born Washington, D. C., 1903
Introduction to Mathematical Logic
The Calculi of Lambda-Conversion;   A Note on the Decision-Problem
An Unsolvable Problem in Elementary Number Theory
Mathematician and logician
Credited for much of the original theoretical bases of computer science
Regarded by many as the greatest America-born logician-mathematician
Proved there's no possibility of an algorithm for determining the validity an arbitrary argument
Princeton University from freshman to full professor
Looked like a "cross between a panda and a large owl"
Enjoyed and collected science-fiction novels
A devout Presbyterian
Before beginning lecture, methodically erased the blackboard spotlessly in even rows
Even had a logical way of eating breakfast:

> **First pour the milk into the empty bowl. Next pour in the proper amount of sugar. Stir the mixture with the breakfast spoon. Then pour in a spoonful or two of cereal. Eat that. Then pour in another spoonful or two, eat that, and so on. The sugar is evenly distributed, and the cereal never has a chance to get soggy**.

http://www.independent.co.uk/news/obituaries/obituary-alonzo-church-1600980.html

Logic has the important function
of saying what follows from what....
Our seeing **logical** principles
stated succinctly with the aid of symbols
may help to fix them
as part of our mental apparatus.
Thus the formal study of **logic**
may reinforce and extend our native facility.
Keep in mind the distinction between
the **logic** we are studying....
and our use of **logic** in studying it.
To any student who is not ready to do so,
we suggest that he pick some other subject instead,
such as acrostics or beekeeping.*
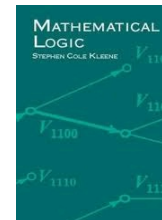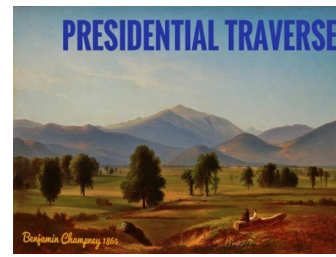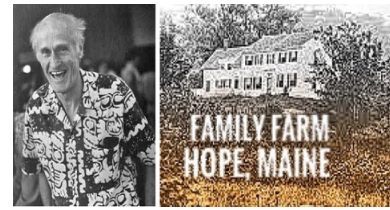
Stephen Cole Kleene

American, born Hartford, Connecticut, 1909
Mathematical Logic
Introduction to Metamathematics, Intuitionistic Mathematics
The Foundations of Intuitionistic Mathematics (with Richard Eugene Vesley)
Amherst College, summa cum laude, 44 years professor at University of Wisconsin
Lieutenant commander and Project director at the wartime Naval Research Laboratory
Work in advanced recursion theory proved crucial in the foundations of computer science
Awarded the National Medal of Science in 1990 by President George H. W. Bush
> **"For his leadership in the theory of recursion and effective computability**
> **and for developing it into a deep and broad field of mathematical research."**
Discovered the Beloria Todde Ammiralis Ba Kleenei butterfly
An avid hiker, did the Presidential Traverse in New Hampshire (above)
A phenomenal knowledge of mushrooms

http://www.nasonline.org/publications/biographical-memoirs/memoir-pdfs/kleene-stephen.pdf

The principles of **logic** are true
simply because
we never allow them
to be anything else.
And the reason for this
is that we cannot abandon them
without contradicting ourselves,
without sinning against the rules
which govern the use of language,
and so making our utterances
self-stultifying.*
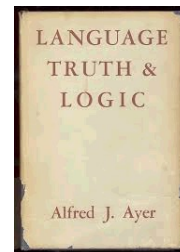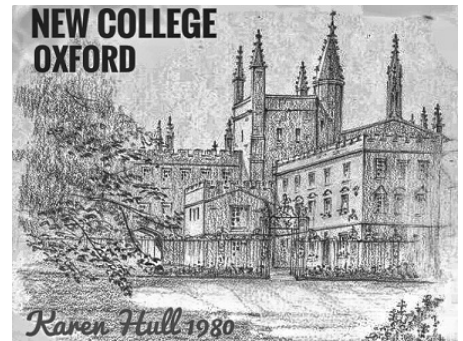
A. J. Ayer

British, born London, 1910
Language, Truth, and Logic (remarkably seminal work, written at age 24)
The Problem of Knowledge, The Central Questions of Philosophy
The Foundations of Empirical Knowledge, Philosophical Essays
Perhaps the century's leading scion of Empiricism and the Principle Of Verification:
    Aside from logic, both meaning and truth are defined only by verifiability in experience
    And therefore: religion, metaphysics, objective morality, and the like are meaningless. §
M16 Intelligence officer during the World War
Wykeman Professor of Logic, New College, Oxford; Knighted 1970
Though an atheist, claimed a near-death experience in which **"I saw a Divine Being"**.

§   It was always understood that the Verification Principle rules out value judgments (even everyday ones) as cognitively meaningless. Ayer (and others) came soon to recognize that if taken baldly, it rules out also scientific theories, and that by its own lights, it is meaningless, since it is neither a logical truth nor verifiable in experience. But attempts to modify the Verification Principle appropriately have not been successful. Still, its spirit helped philosophy steer clear of the non-evidentiary metaphysics and so called "First Philosophy" of the past.

In this BBC interview, Ayer traces the origin, growth, and principles of Logical Positivism and even acknowledges major difficulties with the Verification Principle. https://m.youtube.com/watch?v=nG0EWNezFl4

http://www.ucl.ac.uk/~uctytho/AyerbyTH.html

There is one important difference
between ordinary **logic** and the
automata that represent it.
Time never occurs in **logic**, but every
network or nervous system has a definite time lag
between the input system and the output response.*

'And' and 'or' are the basic operations of **logic**.
Together with 'no' (the logical operation of negation)
they are a complete set of basic logical operations—
all other logical operations, no matter how complex,
can be obtained by suitable combinations of these.**

Everybody who has worked in formal **logic**
will confirm that it is one of
the technically most refractory parts of mathematics.
The reason is that it deals with rigid, all-or-none concepts,
and has very little contact with mathematical analysis.
Thus formal **logic** is cut off from the best cultivated portions
of mathematics and forced onto the most difficult part
of the mathematical terrain, into combinatorics.***
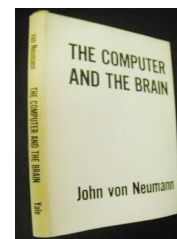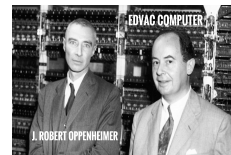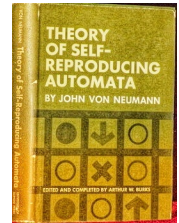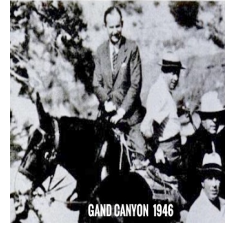
John von Neumann

Hungarian/American, born Budapest, 1903
* "Probabilistic logics and the synthesis of reliable organisms from unreliable components"
** *The Computer and the Brain,* ***Theory of Self-Reproducing Automata*
By all accounts an amazing genius in physics, mathematics, game theory, economics, and more
By age 24, advanced set theory by combining his work with that of [Kurt Gödel](#) and Paul Bernays
First of the great mathematicians to devote major effort to the social sciences
At the Manhattan Project, devised mathematical models to obviate the risks of field tests
Saw that logical operations can be represented by numbers that can then be read and processed
For use in quantum physics, developed a subtle variant of classical Boolean logic
Leading genius in the design and building the first truly modern computer
At age six, able to figure the quotient of two eight-digit numbers in his head
Medal of Freedom for role in Manhattan Project, national security, computers (see photo above)
Then died from cancer putatively caused by atomic radiation at Los Alamos..
Dying, tragically, at age 53, several major works published posthumously
Reckless driver with many accidents, and excelled in off-color limericks
At age 30, the still youngest ever life member of Princeton's [Institute for Advanced Study](#)
His typical irony:........ **"Computers are just like humans–they do everything except think."**

http://www.atomicarchive.com/Bios/vonNeumann.shtml

FIND POSTAGE STAMP

The role of **logical** argument,
of deductive **logical** reasoning,
remains all-important for the critical approach;
not because it allows us to prove our theories,
or to infer them from observation statements,
but because only by purely deductive reasoning
is it possible for us to discover what our theories imply,
and thus to criticize them effectively.
Criticism...is an attempt to find
the weak spots in a theory,
and these, as a rule, can be found
only in the more remote **logical** consequences
which can be derived from it.
It is here that purely **logical** reasoning
plays an important part in science.* §
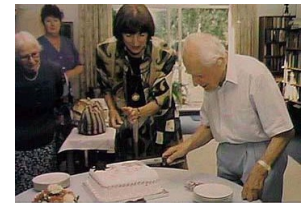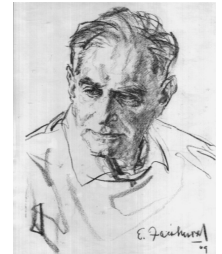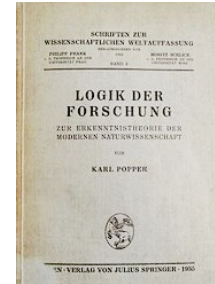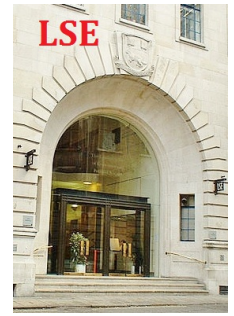
Karl Popper

(90th birthday–also see [Dewey](#) and [Suppes](#))

Austrian/British, born Vienna, 1902
Conjectures and Refutations
The Logic of Scientific Discovery (major advance in philosophy of science)
[Popper Selections](#)   recommended
The Two Fundamental Problems of the Theory of Knowledge
The Open Society and Its Enemies
Famed for the Principle of Falsifiability:
     "A scientific theory must have falsifiable consequences."
1930 marriage to Josefine Anna Henninger ('Hennie')
Argued that while extreme intolerance is self-destructive, extreme tolerance breeds intolerance.
Dreading the rise of Nazism, moved to New Zealand and then Great Britain
Became a British citizen after the war
London School of Economics (LSE above) as Professor of Logic and Scientific Method
Jewish heritage, raised Lutheran, turned Marxist, turned Agnostic

§ cf. [William Minto](#)

http://www.xenodochy.org/article/popper.html   http://tinyurl.com/ju4hmub   recommended

http://www.youtube.com/watch?v=ztmvtKLuR7I

UNIVERSITY OF VIENNA 1930

Hans Figura

CAFÉ JOSEPHINUM
VIENNA 1930

ADELE NEE PORKERT

Vienna

Kurt Gödel
COLLECTED
WORKS

Volume I
Publication 1929-1936

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JOHN W. DAWSON, JR. · STEPHEN C. KLEENE
GREGORY H. MOORE · ROBERT M. SOLOVAY
JEAN VAN HEIJENOORT

PRINCETON 1943

BEST FRIEND

The blindness of past **logicians**
was the widespread lack
of the required epistemological attitude.
....
Objective concepts of mathematics
are fundamental to my work in **logic**.

In Hao Wang, *From Mathematics to Philosophy*

Logic is a science prior to all others,
which contains the ideas and principles
underlying all the sciences.

In James Gleick, *The Information: A History, a Theory, a Flood*
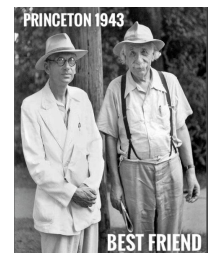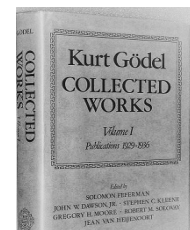
Kurt Gödel

Austrian-American, born Brünn, Austro-Hungary, 1906
On Formally Undecidable Propositions......
The Completeness of the Axioms of the Functional Calculus of Logic
Student then professor at the University of Vienna (above)
Often met with colleagues at the Café Josephinum (above)
Before the start of the war, joined the Princeton Institute for Advanced Study
Considered the most brilliant logician of the 20th century
Amazingly, proved that some truths in formal systems can **never** be proved!
A convinced theist, rejected his friend Albert Einstein's view that God is impersonal
Was certain that: **"If the world is rationally constructed, there must be an afterlife."**
At swearing-in for American citizenship, told the judge that there is
      a logical inconsistency in the Constitution to allow for a dictatorship.
      But seeing Gödel's best friend Albert Einstein standing next to him,
      the judge hastily silenced Gödel and conferred citizenship.
Paranoid of being poisoned, ate food if and only if prepared by his wife Adele
"Gödel is absolutely irreplaceable. In a class by himself."..........[John von Neumann](#)

https://m.youtube.com/watch?v=w6e14vcmwKY   FIND POSTAGE STAMP
http://www.marxists.org/reference/subject/philosophy/works/at/godel.htm

Logic analyzes the meaning
of concepts common to all science
and establishes the general laws
governing those concepts.*
....
It was undoubtedly a great achievement
of modern logic to have replaced
the old psychological notion of proof,
which could hardly ever be made clear and precise,
by a new simple notion
of a purely formal character.**

It is my strong belief
that the fundamental ideas of modern logic
and methodology of deductive thinking
should be regarded as an essential element
of higher learning and be made available
to the widest possible circle of students.***

Religion and ideology divide people,
logic brings them together.

Reliable hearsay, see [Jan Woleński](#)
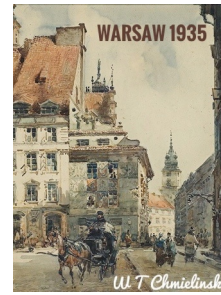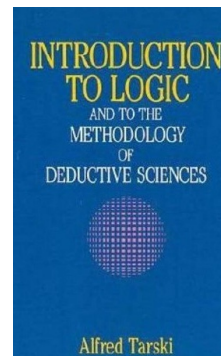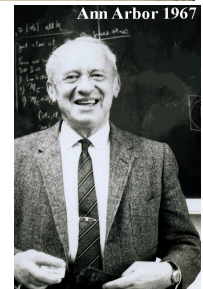
Alfred Tarski

Polish-American, born Warsaw, 1901
Introduction to Logic and to the Methodology of Deductive Sciences
"Truth and Proof",   * "Remarks concerning the study of mathematical logic...."
"The Semantical Concept of Truth and the Foundations of Semantics"
Leading figure in advancing logic far beyond Aristotle
For a Boston symposium, was on last ship from Poland before the war (see passport date above)
Naturalized American citizen in1945

http://www.ditext.com/tarski/tarski.html   http://www.ams.org/notices/200708/tx070800986p.pdf

There exist formulations of **logic** which begin
by specifying a computable set of formulas
called the *logical axioms*.
One then employs the rule of *detachment*
(also called *modus ponens*)
from A and A ➡ B to obtain B
where A and B are each formulas of the theory.
Thus in this formulation, the theorems of the theory
are those formulas obtained
by iteratively employing the rule of detachment.*
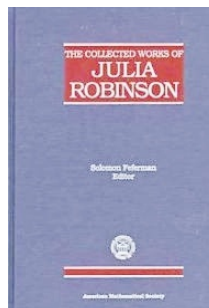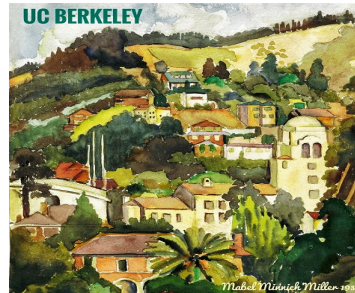
Julia Bowman Robinson

American, born St. Louis, Missouri, 1919
*"Hilbert's Tenth Problem"   *Collected Works*
Married her teacher Raphael Robinson, himself a prominent logician/mathematician
Major contributor in solving Hilbert's Tenth Problem, (see links below)
Plagued with severe illnesses throughout life, thus only able to teach one sixth time at UC Berkeley
Within the limits of her strength, devoted herself to Adlai Stevenson's 1952 and 1956 presidential campaigns
But eventually did become full professor
One of the earliest female members of the National Academy of Sciences
First woman president of the American Mathematical Society
PhD directed by Alfred Tarski,   Succumbed to leukemia at age 65
Life and accomplishment a must see movie–***Julia Robinson and Hilbert's Tenth Problem***
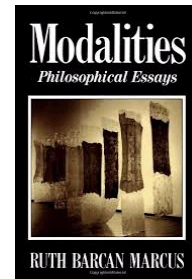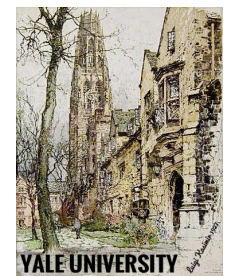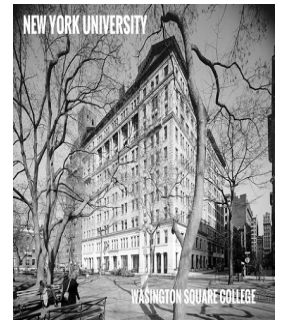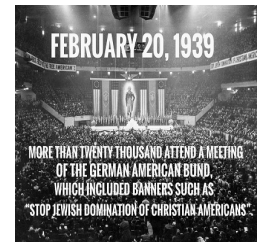A truly inspirational figure

http://www.ams.org/notices/200805/tx080500573p.pdf
            http://www.zalafilms.com/films/juliarobinson.html
https://www.maa.org/sites/default/files/pdf/uploa_library/22/Polya/07468342.di020720.02p00912.pdf
            http://www.nasonline.org/publications/biographical-memoirs/memoir-pdfs/robinson-julia.pdf

Feb. 20, 1939
Anti-Nazi demonstration
Madison Square Garden

FEBRUARY 20, 1939

MORE THAN TWENTY THOUSAND ATTEND A MEETING OF THE GERMAN AMERICAN BUND, WHICH INCLUDED BANNERS SUCH AS "STOP JEWISH DOMINATION OF CHRISTIAN AMERICANS".

One of the tasks of **logic**
is to select from all the sentences
that express the same thought
those that express it better.
The best way is the thought's
Logical Form.*

NEW YORK UNIVERSITY
WASHINGTON SQUARE COLLEGE

YALE UNIVERSITY

Modalities
Philosophical Essays
RUTH BARCAN MARCUS

Ruth Barcan Marcus

American, born New York City, 1921
Modalities: Philosophical Essays
"A functional calculus of first order based on strict implication" (modal logic opus)
"The identity of individuals in a strict functional calculus of second order" (continued)
Highly prominent woman in the history of logic, distinguished professor at Yale University
Early fundamental work in and career-long exponent of modal logic
Famous for the "Barcan Formula": a possible existence = the existence of a possibility
Argues that a coherent morality can exist in some possible world, even if not in the actual one
Awarded the Lauener Prize for Analytic Philosophy
Active participant in anti-Nazi demonstrations (see above)
On 1940 Olympics fencing team (see above), but games cancelled due to the war

http://leiterreports.typepad.com/blog/2008/10/timothy-william.html   [click Download Laudatio]

http://www.nytimes.com/2012/03/14/us/ruth-barcan-marcus-philosopher-logician-dies-at-90.html

The principles of **logical inference**
are universally applied in every branch
of systematic knowledge....
For example, if we know what forces
are acting on a body
and we know at a given time
where the body is and what its velocity is,
we may use the theory of mechanics
together with the rules of **logical inference**
to predict where the body will be at some future time.*

[However] in the study of **logic**
our goal is to be precise and careful.
The language of **logic** is an exact one....
We need to draw up a set of rules
that will be perfectly clear and definite
and free from the vagueness
we may find in natural language.**

I am doubtful of the appropriateness
of the standard notions of **logical form**...
I have come to be skeptical
of the long philosophical tradition
of looking for various kinds of bed rocks of certainty,
whether in epistemology, **logic**, or physics.***
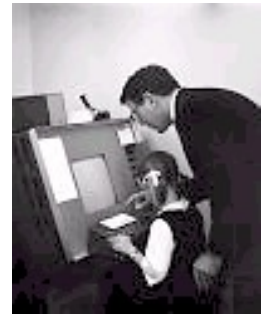
1990 National Medal of Science
President George H. W. Bush
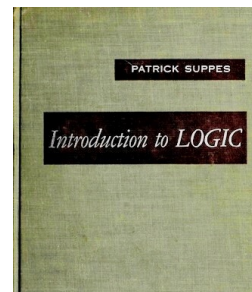
Patrick Suppes
(91st birthday–also see Dewey and Popper)

American, born Tulsa, Oklahoma, 1922
Introduction to Logic
Axiomatic Set Theory
First Course in Mathematical Logic
Sets and Numbers, Grades K-6 (with student workbooks)
Language for Humans and Robots, Representation and Invariance of Scientific Structures
****Autobiography***
Leader in the development of logic in line with education, robotics, and the digital revolution
Honored professor at Stanford University
Acknowledged prime mover in computer-based learning
Would jokingly needle graduate students saying, **"My 5th graders are better at logic than you."**
His National Medal of Science citation:
"For his broad efforts to deepen the theoretical and empirical understanding of four major areas: the measurement of subjective probability and utility in uncertain situations; the development and testing of general learning theory; the semantics and syntax of natural language; and the use of interactive computer programs for instruction."

https://news.stanford.edu/news/2014/november/patrick-suppes-obit-112514.html

Logical investigations can obviously
be a useful tool for philosophy.
They must, however, be informed
by a sensitivity to the philosophical significance
of the formalism
and by a generous admixture of common sense,
as well as a thorough understanding
both of the basic concepts
and of the technical detailsof the formal material used.
It should not be supposed that the formalism
can grind out philosophical results
in a manner beyond the capacity
of ordinary philosophical reasoning.
There is no mathematical substitute for philosophy.*
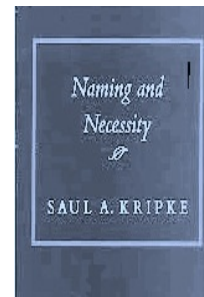
Saul Kripke

American, born Bay Shore, New York,1940
* "Is there a Problem about Substitutional Quantification?"
 Naming and Necessity
Wittgenstein on Rules and Private Language
Teenage sensation to senior guru
Many, many important papers still unpublished
Moving force in Modal Logic
Theory of "Rigid Designators" a cause célèbre
Though not entirely true, the story goes that when his first essay arrived at Harvard,
    the philosophy department was so stunned it invited him to join the faculty.
    But Saul wrote back that his mother wanted him to first finish high school.
While a sophomore at Harvard, was named University Fellow for high level math and logic
Graduated B.A. Summa Cum Laude, that being his ONLY earned degree
Numerous honorary degrees, international awards, and distinguished Professorships
Recipient of the **Schock Prize**, the highest international honor in logic and philosophy
Mission of the Manhattan SAUL KRIPKE CENTER:
   **"To promote the study of the intellectual achievements of Saul Kripke."**   !
At 65 remarked, **"I wish I could have skipped college"**;
    "I probably would have learned it all anyway, just reading on my own."

http://www.nytimes.com/2006/01/28/books/28krip.html?_r=1

The generality of **logic**
is of a different kind
from that in other domains of
knowledge...
This generality is one in which
a valid formula is true
when its objects and predicates
are ranging over any domain
of objects and predicates
and its predicates are interpreted
in any possible way.*
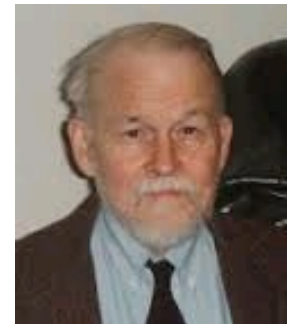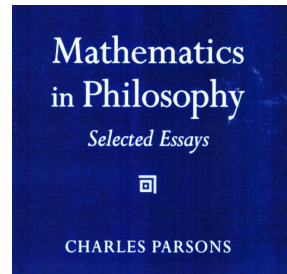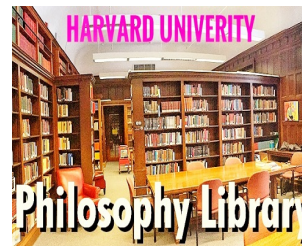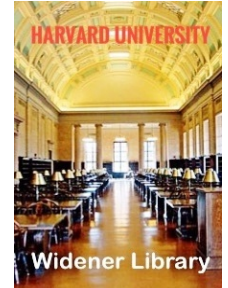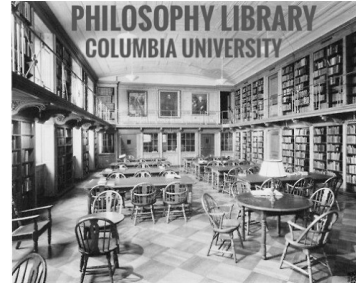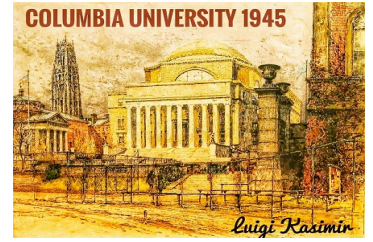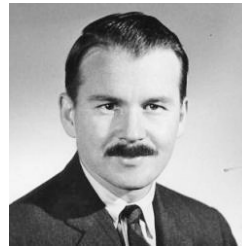
Charles Parsons

American, born Boston, 1933
* *Mathematics in Philosophy: Selected Essays*
 From Kant to Husserl, *Logical and Intuitions*
Mathematical Thought and Its Objects, *Kurt Gödel Collected Works, Vol. III-V* (co-editor)
Prominent at Cornell, Columbia, and Harvard Universities
Major work in logic, ontology, epistemology, and the philosophy of language.
Recognized scholar on mathematical intuition
Important work in foundational and epistemological issues in set theory and number theory
Stressed the importance of understanding the historical developments in logic, philosophy, and mathematics
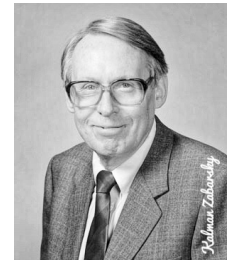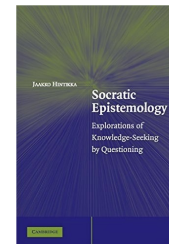Major studies on Kant, Husserl, Frege, Gödel, and Brouwer
Member of the American Academy of Arts and Sciences and the Norwegian Academy of Science and Letters
Son of Talcott Parsons, acclaimed Harvard sociologist for 45 years

http://www.harvardphilosophy.com/issues/XVII/Interview%20with%20Charles%20Parsons.%20On%20Philosophy%20of%20Mathematics.pdf

What does a so-called rule of inference have to do
with the actual drawing of inferences?
If you are given twenty-one potential premises,
do the "rules of inference" tell you which conclusions
you should draw from them?
What conclusions a rational person would draw?
To what conclusion would "laws of thought"
lead you from the premises?
Or, deceptively, what conclusions
do people usually draw from them?
The right answer is: None of the above.
In **logic** texts, "rules of inference" only tell you
which inferences you may draw
from the given premises without making a mistake.*

Kirchberg am Wechsel, Austria

Jaakko Hintikka

Finnish, born Vantaa, 1929
*Socratic Epistemology
Knowledge and Belief, Inquiry as Inquiry, Philosophy of Mathematics (Readings in Philosophy)
Time & Necessity: Studies in Aristotle's Theory of Modality, Models for Modalities
The Logic of Epistemology and the Epistemology of Logic
Honored professorships at several universities
Recipient of the Rolf Schock Prize, the highest international award in philosophy
Professor at Stanford, Florida State, and Boston Universities
Foundational and extensive work in epistemic logic.
    That is, under what conditions can belief constitute knowledge?
Chief architect of Independence-Friendly Logic to bypass purported pitfalls of Ordinary First-Order Quantification
30+ books, 300+ published papers, in 9+ languages
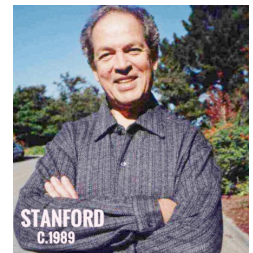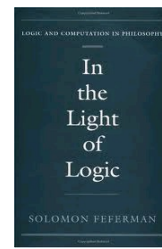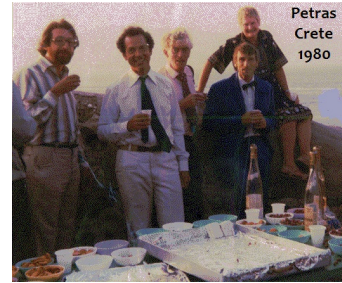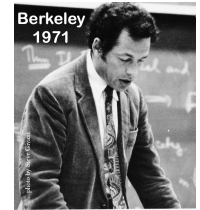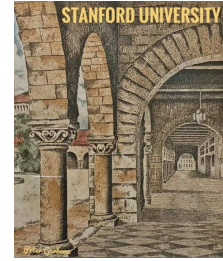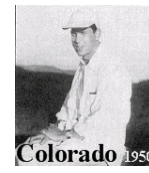Very interested in wartime spies
Only regret: not having drunk enough champagne
His father a mycologist, during hard times in Finland the family survived by eating a lot of mushrooms.

  Coupled with intellectual courage, Jaakko's vision--which went over the heads of most people--made him a pioneer who transformed the philosophical landscape by challenging, threatening, and overturning many a cherished idée reçue (such as blind faith in extensionlity). He was humble, committed to friendship and to being good, decent, fair, and generous with his time and power....... **Claire Ortiz Hill**

The aim of **logic**
is to characterize the forms of reasoning
that lead invariably
from true sentences to true sentences,
independently of the subject matter.
The sentences involved are analyzed
according to their **logical**
(as opposed to grammatical) structure,
i.e. how they are compounded from their parts
by means of certain operations
on propositions and predicates....
To spell this out in general, one must explain
how the truth of compounds under given operations
is determined by the truth of the parts,
and characterize those forms of rules of inference
for the given operations
that insure preservation of truth.*

Solomon Feferman
(with W. V. O. Quine)

American, born New York City, 1928
* *"Which Quantifiers are Logical? A combined semantical and inferential criterion"*
In the Light of Logic, *Kurt Gődel, Collected Works* (editor-in-chief)
Model-Theoretic Logics (editor, with J. Barwise), *Alfred Tarski: Life and Logic*, with Anita Burdman Feferman
The Number Systems: Foundations of Algebra and Analysis
Scores of articles in journals and collections
Distinguished professor of philosophy and mathematics at Stanford University
A truly prolific and influential force in mathematical logic and the foundations of mathematics
Recipient of the **Schock Prize**, the highest international honor in logic and philosophy
As a 19 year old student waiter, served a boiled egg to Robert J. Oppenheimer (father of the atomic bomb)

http://math.stanford.edu/~feferman/papers/Proof-UPenn.pdf

Old Fine Hall
Princeton University
Mathematics library

CARNEGIE MELLON UNIVERSITY
John Strachey

Novosibirsk   2009
Semën Samsonovic Kutateladze

1970
PHILOSOPHICAL PROBLEMS IN LOGIC
Some Recent Developments
Edited by Karel Lambert
DANA SCOTT
"Advice on Modal Logic"

University of Edinburgh
2014

Logic has been long interested
in whether answers to certain questions are computable in principle,
since the outcome puts bounds on the possibilities of formalization.
More recently, precise comparisons in the efficiency of decision method
have become available through the developments in complexity theory.
These, however, are applications to **logic**,
and a big question is whether methods of **logic**
have significance in the other directions
for the more applied parts of computability theory.....
My own work has concentrated on seeing whether the ideas of **logic**
can be used to give a better conceptual understanding
of programming languages.*

One often hears that modal (or some other) **logic** is pointless
because it can be translated into
some simpler language in a first-order way.
Take no notice of such arguments.
There is no weight to the claim that the original system
must therefore be replaces by the new one.
What is essential is to single out important concepts
and to investigate their properties......
All kinds of statements have indirect reference
to the here, the now, the I (first person). These statements have a **logic**,
and it is possible to say that some of these are true
by virtue of their syntactical form.
Thus in view of the commonness and simplicity of these statements,
we are certainly obliged to investigate their intrinsic **logic**.**
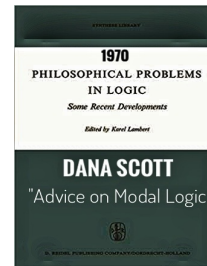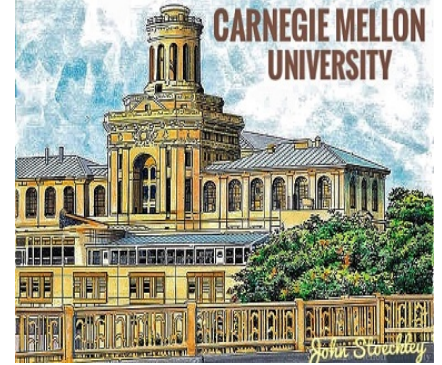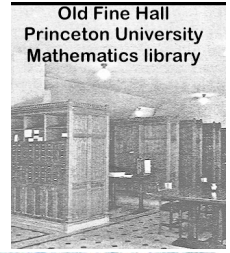
Dana Scott

American, born Berkeley, California, 1932
* "Logic and Programming Languages"   his Turing Award Lecture
** "Advice on Modal Logic"
"Finite Automata and their Decision Problem"   with Michael O. Rabin
Outline of a Mathematical Theory of Computation a technical report
Toward a Mathematical Semantics for Computer Languages   a technical report with Christopher Strachey
"Semantic Domains"   with C. A Gunter
Studied with [Alfred Tarski](#) at UC Berkeley, and Ph.D. directed by [Alonzo Church](#) at Princeton
Founded the field of denotational semantics, as a mathematical foundation for programming languages
Professorships at Princeton, Oxford, Amsterdam, Stanford, Linz, Chicago, Berkeley, Carnegie Mellon
Honorary Fellow of Merton College, Oxford, and, over the years, researcher at other venues
Numerous awards including the Rolf Schock Prize, the Bolzano Medal, and the ACM Turing Award
Honorary doctorates from Utrecht, Darmstadt, Edinburgh, Ljubljana, and St. Andrews

https://amturing.acm.org/award_winners/scott_1193622.cfm

Logic is necessary but not sufficient
for solving philosophical problems.
To make progress in philosophy we need
to use long chains of reasoning in areas
where it is very hard to distinguish
valid from invalid reasoning.*

Logic resembles good poetry:
precise, radical, imaginative,
elegant, powerful, orderly,
subtle, reflective, and accurate.**

** Authorized rewording from session with photographer Steve Pyke, March 2003
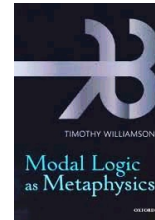
Timothy Williamson

British, born Uppsala, Sweden (as British citizen), 1955
* "Interview with Chen Bo"   (see link below)
The Philosophy of Philosophy, Knowledge and Its Limits
Vagueness, *Identity and Discrimination, Modal Logic as Metaphysics*
"My central theme is the gap between what is true and what can be known."
"To be precise is to make it as easy as possible for others to prove one wrong.
        That is what requires courage."
Wykeham Professor of Logic, New College, Oxford
Prefers the likes of Jane Austen and Dashiell Hammett:
        "who are clever, clear-eye, and exact, but who don't attempt to do philosophy."

http://www.fitelson.org/few/few_06/twilliamson.pdf

http://opinionator.blogs.nytimes.com/2012/05/13/logic-and-neutrality/

http://www.ucd.ie/philosophy/perspectives/resources/issue3/Perspectives_volumeIII_Modality.pdf

http://hardproblem.ru/interview/t-williamson/lang-pref/en/

RIP: Bernard of Chartres used to say that we are like dwarfs on the shoulders of giants,
so that we can see more than they, and things at a greater distance,
not by virtue of any sharpness of sight on our part, or any physical distinction,
but because we are carried high and raised up by their giant size.

John of Salisbury, *Metalogicon*, 12th century
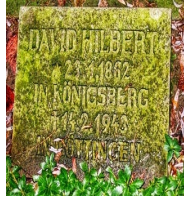
David Hilbert

Kurt Gödel

Ludwig Wittgenstein

Karl Popper
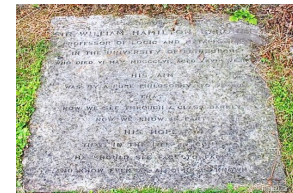

George Boole

Constance Jones
read inscription

Gottlob Frege

Charles S. Peirce

Isaac Watts

Gottfried Leibniz

Bernard Bolzano

William Hamilton
read inscription

John of Salisbury
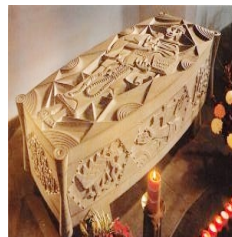
Duns Scotus
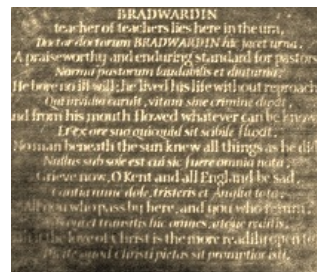
Thomas Bradwardine
read inscription

Blaise Pascal

Aristotle

Boethius

Avicenna
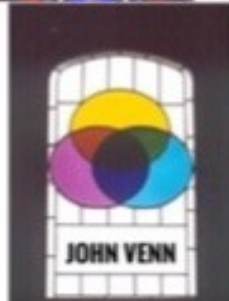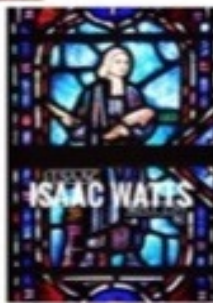

Abelard and Eloise

PHILATELIC LOGIC

STAINED GLASS

TOMBSTONE INSCRIPTIONS

Thomas Bradwardine

Teacher of teachers lies here in the urn,
A praiseworthy and enduring standard for pastors.
He bore no ill will: he lived his life without reproach:
And from his mouth flowed whatever can be known.
No man beneath the sun knew all things the way he did
Grieve now, O Kent and all England be sad.
All who pass by here and all who return
Know that the love of Christ is the more readily open to them.

William Hamilton

Sir William Hamilton baronet
Professor of logic and metaphysics
In the University of Edinburgh
Who died VI May MDCCCLVI aged LXVII years
His aim was by a pure philosophy to prove
That now we see through a glass darkly
Now we know in part.
His hope was that in the life to come
He should see face to face
And know even as also he is known.

Constance Jones

Her life was illuminated
By her love of truth and of justice,
By her sympathy and kindness
And her zeal for knowledge.
In Thy light shall we see light.

David Marans
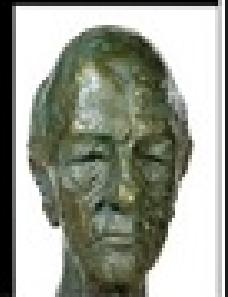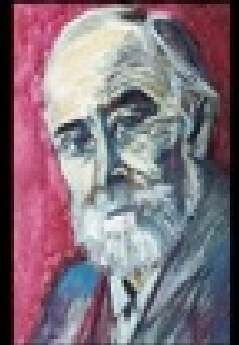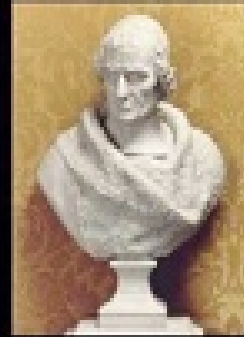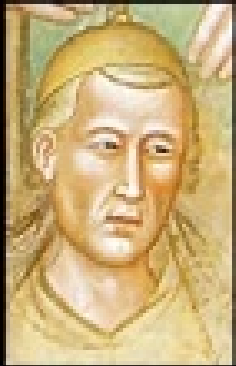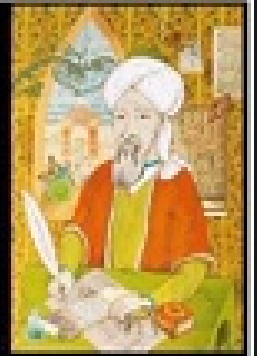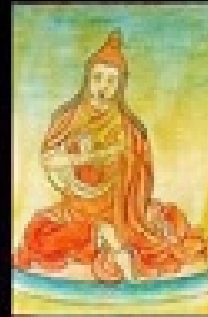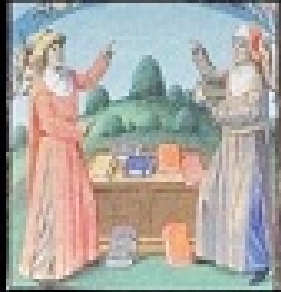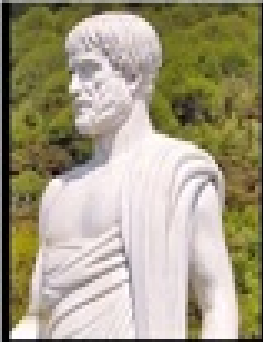
Aristotle   Apuleius   Plotinus/Porphyry   Dharmakīrti   Avicenna
William of Ockham   Lorenzo Valla   Juan Luis Vives   Antoine Arnauld   Gottfried Leibniz
Isaac Watts   Bernard Bolzano   George Boole   Richard Whately   Gottlob Frege
Constance Jones   Bertrand Russell   Henri Bergson   Alfred Tarski   Willard V. O. Quine

Christine Ladd Franklin   Early Feminist

Women and Letters.

To the Editor of The New York Times:

Isn't it rather absurd that an American Academy of Arts and Letters should be an exclusively male Academy of Arts and Letters? Isn't it rather absurd that Edith Wharton, for instance, who is without question the most distinguished American in the realm of letters, should not have been invited to join a self-constituted body of " immortals "? There is rather more excuse perhaps for an authors' club preferring to be a male authors' club if that is what seems good to it, but as soon as a group of writers and artists arrogate to themselves a name of such special connotation as " Academy " the situation is different, and they show themselves very lacking, in good taste at least, if they exclude women. This very Academy, in fact, did better than this at its beginning, for Julia Ward Howe was a member of it until her death.

It is a long time since other organizations have found any reason for not admitting women. The scientific societies, for instance, have not only admitted them but have treated them with all deserved honor; Professor Calkins of Wellesley has been President of both the Psychological Association and the Philosophical Association, and this very month the Psychological Association meeting at Princeton will be presided over by Professor Washburn of Vassar. Does not the Academy of Arts and Letters (which ought if anything to be further advanced in the humanities than the plain scientists) feel that it is rather old-fashioned?

                CHRISTINE LADD FRANKLIN.

Columbia University, Dec. 10, 1921.

The Order of Merit, founded in 1902 by King Edward VII, is a special mark of honor conferred by the Sovereign of Great Britain on individuals of exceptional distinction in the arts, learning, sciences and other areas such as public service. Appointment to the Order is the Sovereign's personal gift and ministerial advice is not required.

CODA ONE

French political philosopher Charles-Louis Montesquieu (1689-1755)

A Light Purgative
Take three leaves of Aristotle's **logic** in Greek,
two leaves of a treatise on scholastic theology,
the keener the better, as, for example,
that of the subtle Scotus; four of Paracelsus;
one of Avicenna; six of Averroes; three of Porphyry;
as many of Plotinus, and as many of Iamblicus.
Infuse the whole for twenty-four hours, and take four doses a day.
Persian Letters, **CXLIII**

The *Persian Letters* is a satire on the senseless, archaic, harmful, and foolish aspects of both European and Eastern culture —in law, religion, medicine, government, society, education, philosophy, etc.

"A Light Purgative" mentions six writers who are included in *Logic Gallery.*
The other two, Paracelsus (Germany, 16th century) and Iamblichus (Syria, 3rd century) are best remembered for popular myths, magical formulas, and astrological curatives.

CODA TWO

German poet, playwright, novelist, scientist, statesman, director, critic, and artist
Johann Wolfgang von Goethe (1749 – 1832)

Mephistopheles:
Use your time well: it slips away so fast, yet
Discipline will teach you how to win it.
My dear friend, I'd advise, in sum,
First, the Collegium **Logicum.**
There your mind will be trained,
As if in [Spanish boots](#), constrained,
So that painfully, as it ought,
It creeps along the way of thought,
Not flitting about all over,
Wandering here and there.
So you'll learn, in many days,
What you used to do, untaught, as in a haze,
Like eating now, and drinking, you'll see
The necessity of One! Two! Three!
Truly the intricacy of **logic**
Is like a master-weaver's fabric,
Where the [loom](#) holds a thousand threads,
Here and there the shuttles go
And the threads, invisibly, flow,
One pass serves for a thousand instead.
Then the philosopher steps in: he'll show
That it certainly had to be so:
The first was - so, the second - so,
And so, the third and fourth were - so:
If first and second had never been,
Third and fourth would not be seen.

Faust, Part One

CODA THREE

German novelist and social critic Thomas Mann (1875-1955)

Nor would I forget that we marched off to war at the time
with a comparatively pure heart
and did not believe our previous behavior at home
had been such that a bloody global catastrophe need be regarded
as the inevitable **logical consequence** of our domestic conduct....
[Yet] if it is true, as the German proverb has it,
that every path to a right goal is right every step of the way,
then one must admit that the path that led to this doom
was doomed at every point, at every turn,
however bitter to endorse this **logic**.
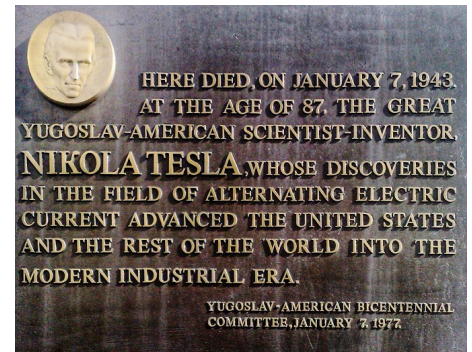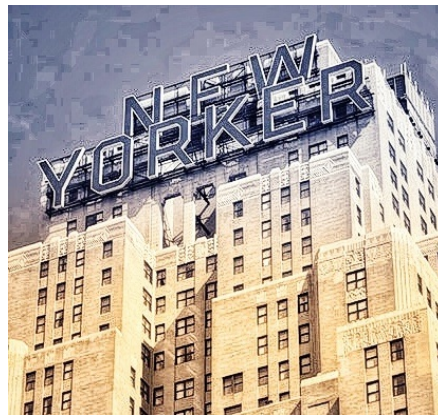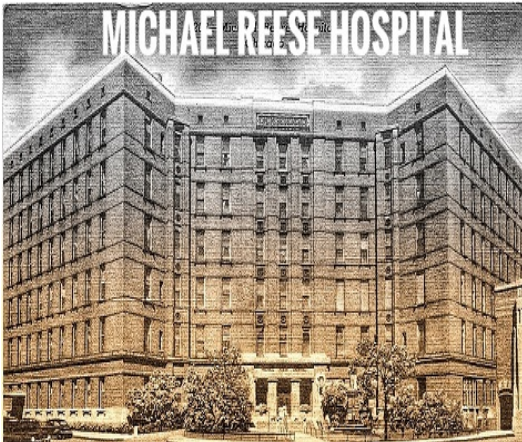
Doctor Faustus

The context here is the Second World War.

David Marans
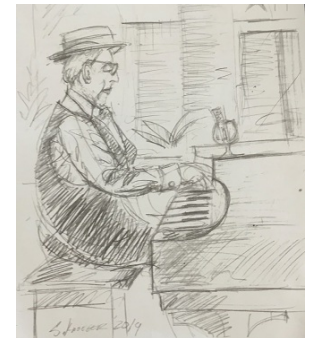
Ancillary Profession

see quotation in FOREWORDS

BORN: in Michael Reese Hospital the same hour Nikola Tesla died in the Hotel New Yorker.

EDUCATION: New York, Florida, Massachusetts

POSITION: Thirty-five years philosophy professor, itinerant pianist

AUTHORS: Sarah Orne Jewett, Charles Sanders Peirce, Ernst Cassirer, Sinclair Lewis, Karl Popper, Thomas Mann, Winston Churchill, Willard Quine, Josiah Royce, Miguel Montaigne, Henry James, Immanuel Kant, Thomas Hardy, Geoffrey Chaucer

COMPOSERS: J. S. Bach, Irving Berlin, Chopin, Corelli, Stephen Foster, George Gershwin, Handel, Haydn, Jerome Kern, Mozart, Offenbach, Palestrina, Pergolesi, Richard Rogers, Schumann, John Philip Sousa, Richard Strauss, Vivaldi

FILM: Blue Angel (1930), Fail Safe (1964), Modern Times, To Be or not to Be 1942), M (1930), Witness for the Prosecution (1957), Maltese Falcon, Key Largo, Here Comes Mr. Jordan (1941), Strangers on a Train, The Petrified Forrest, Double Indemnity, The Producers, Dodsworth, Grand Hotel (1932), City Lights, Dinner at Eight (1933), Dial M for Murder, Olympiad, Metropolis

EMAIL: chicago194317@gmail.com

Proof for the Law of Explosion

by C. I. Lewis in Lewis and Langford, *Symbolic Logic*, 1932

From any proposition of the form $p \sim p$, any proposition whatever, q, may be deduced as follows:

$$\text{Assume } p \sim p. \tag{1}$$

$$(1) \dashv p \tag{2}$$

If p is true and p is false, then p is true.

$$(1) \dashv \sim p \tag{3}$$

If p is true and p is false, then p is false.

$$(2) \,.\, \dashv \,.\, p \vee q \tag{4}$$

If, by (2), p is true, then at least one of the two, p and q, is true.

$$(3) \,.\, (4) \,:\, \dashv \,.\, q$$

If, by (3), p is false; and, by (4), at least one of the two, p and q, is true; then q must be true.